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Report of the Fourth Session

ADVISORY COMMITTEE ON MARINE RESOURCES RESEARCH

Rome, 16-21 January 1967



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
ROME, 1967

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FRv/R40.2	(Tri)	Report of the third FAO technical meeting on fishing boats, Göteborg, Sweden, 23-29 October 1965, Working Papers Rapport de la troisième réunion technique de la FAO sur les bateaux de pêche, Documents de travail Informe de la tercera reunión técnica de la FAO sobre buques de pesca, Documentos de Trabajo	1967
FRm/R41 Suppl. 1	(En)	Report of the fourth session of the Advisory Committee on marine resources research, Rome, 16-21 January 1967. Report of ACMRR working party on direct and speedier estimation of fish abundance	1967
FRi/R44.1	(En)	Proceedings of the FAO world symposium on warm-water pond fish culture, Rome, 18-25 May 1966	1967

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REPORT OF THE FOURTH SESSION OF THE
ADVISORY COMMITTEE ON MARINE RESOURCES RESEARCH

Rome, 16 - 21 January 1967

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Rome, May 1967

PREPARATION OF THIS REPORT

This is an edited and approved version of the Report of the Fourth Session of the Advisory Committee on Marine Resources Research (ACMRR : 4/67/WP.33) as amended at the closing session. The approved versions of the Reports of ACMRR Working Parties on Direct and Speedier Estimation of Fish Abundance and Fishermen's Charts and the Utilization of Synoptic Data are being issued as supplements to this main Report.

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I. GENERAL REPORT

1. PROCEDURAL MATTERS

1.1 Opening Session

The Chairman, Dr. C. E. Lucas, opened the Session and introduced to Mr. R. I. Jackson, Assistant Director-General, Department of Fisheries, the ACMRR members, members of the working parties and representatives and observers of other international organizations attending the Fourth Session of the Committee.

Mr. Jackson welcomed, both on behalf of the Director-General and himself, all participants.^{a/} He emphasized the role which ACMRR played in developing ideas and creating the climate which led to the reorganization and strengthening of fisheries activities in FAO. This change was well-timed in view of increased interest by member countries in the study and utilization of marine resources as revealed by the recent UN Resolution (approved at the last session of the General Assembly) which called for a comprehensive survey of activities of the various organizations of the UN family and others with respect to the sea. Mr. Jackson said that ACMRR advice to the Director-General on this matter would be most welcome. He also drew special attention to the activities of the Committee's Working Parties, pointing out that FAO awaits the reports of these bodies with interest. The conclusions of the Working Party of the FAO Regional Fisheries Councils and Commissions will be of particular importance to COFI and its subsidiary bodies. In fact a special item has been reserved on the Agenda of COFI for the consideration of any matter which ACMRR may recommend to the Director-General for subsequent discussion and action. Mr. Jackson pointed out that marine pollution problems and their effects on the living resources of the sea continue to be closely followed by FAO.

Mr. Jackson recalled the advisory role of the Committee to IOC and emphasized the close collaboration and joint action which continue to develop between FAO and UNESCO especially, as well as FAO collaboration with other agencies concerned with marine science and its applications.

The Program of Work and Budget for 1968/69 for the Department of Fisheries had just been completed and Mr. Jackson stated that the Committee's remarks on it would be welcome.

In conclusion, Mr. Jackson said that the Director-General was unable to attend the Session due to other commitments, but that he hoped to have an opportunity of meeting the members within the next few days. On behalf of the Director-General, Mr. Jackson then thanked all those attending the meeting and wished them all success in their deliberations.

Before passing to the next item on the Agenda, the Chairman announced with deep regret the untimely death in an automobile accident of Dr. H. Einarsson in Aden on 25 December 1966. Dr. Einarsson, Director of the FAO/UNDP(SF) fisheries project in the Gulf of Aden, South Arabian Federation, was previously Director of the Fisheries Development project in Peru. He had been with FAO for over eight years and was well appreciated as a scientist and colleague by members of the Committee.

1.2 Adoption of the Agenda

The Chairman presented the Draft Provisional Agenda for consideration and suggested a new item - 3.5: General Review of the Program of Work of the Fishery Resources and Exploitation Division for 1968/69 and Future Biennia.

^{a/}

See Appendix 2.

It was also suggested that some items in the Agenda of the COFI Sub-Committee on the Development of Cooperation with International Organizations Concerned with Fisheries be considered when discussing item 3.3 - FAO Regional Fisheries Councils and Commissions, particularly those items referring to the revision of the CARPAS statutes and the Rational Utilization of the Fishery Resources of the Eastern Middle and Southeastern Atlantic.

It was also noted that the proposal of Professor Kort for an international project to study the North Atlantic dynamics and hydrology had been received and should be discussed under item 6.3.

The Committee agreed to discuss these new points as proposed by the Secretariat and approved the Agenda^{a/} with the additional item 3.5.

The Committee suggests that the Secretariat, when preparing future agendas and in order to facilitate discussion, should organize the items around specific problems or important topics.

1.3 Date and Place of Fifth Session

The Committee suggests that the Fifth Session be held at the end of February or beginning of March 1968 at FAO Headquarters, Rome, the final date to be decided later by the Secretariat in consultation with the Chairman.

1.4 Election of Officers for Forthcoming Period of Activities

The following members were proposed and elected by acclamation: Dr. C.E. Lucas (Chairman), Dr. G.L. Kesteven (Vice-Chairman and Rapporteur) and Dr. W.M. Chapman (Vice-Chairman).

2. IMPLEMENTATION OF RECOMMENDATIONS OF THIRD SESSION

In accordance with the wishes expressed at the Third Session, the Secretary presented a Progress Report on the implementation of ACMRR recommendations. The Secretary prefaced his report by stating that the postponement of the Fourth Session was caused by the creation of the Department of Fisheries. From a budgetary standpoint, the consequent transfer of funds then permitted the convening of working parties as recommended by the Committee. The two-year gap in the holding of the Fourth Session allowed more detailed treatment of some of the recommendations made at the Third Session, although of course the lack of advice of the Committee was felt on various occasions during the intervening period. This also resulted in an undesirable accumulation of items in the Agenda.

The Secretary then emphasized the main points of his Progress Report and stated that other aspects will be dealt with in conjunction with specific items of the Agenda and background information will be found in the documentation prepared for the Session.

The Committee, being aware of the conditions under which the Secretariat is working, wishes to express its appreciation of the devotion of the Secretariat to the servicing of ACMRR.

3. GUIDE LINES FOR THE DEVELOPMENT OF FAO ACTIVITIES

3.1 Relations between ACMRR and COFI

Mr. F.E. Popper, Director of Program Coordination and Operations, outlined the establishment, structure and work of the Committee on Fisheries (COFI) recently set up in accordance with the recommendation of the Thirteenth

^{a/}

See Appendix 1.

Session of the Conference. He stressed the inter-governmental nature of COFI compared with the individual nature of the appointments to the ACMRR. The Committee heard this background information with great interest. Noting the views of COFI that many mutual benefits could arise from close collaboration between the two FAO Committees, with which complete agreement was expressed, the Committee agrees to request the Director-General to convey its views to COFI with an assurance of its desire to assist in any way possible with that Committee's important work.

3.2 Fishery resource aspects of Indicative World Plan (IWP) -
World Program of Marine Resources Research

The Committee received and examined with high interest and approval the report of the first session of the IWP Working Party on Marine Resources Appraisal.

- (a) A knowledge of quantity and quality of marine living resources, and of their distribution in time and space, lies at the heart of the work of FAO Department of Fisheries, as well as that of the fishery agencies of the Member Nations, and governs to a substantial degree the effectiveness of the use which may be made of that work. Knowledge and understanding of the ocean and its living resources is now advancing to a level where improvements in the precision of such appraisals may be expected to improve that effectiveness sharply in the near future. For this reason the Committee applauds the present effort of the Department in this field, as an aspect of IWP, and recommends that such efforts be continued and stepped up in scope and intensity as they represent an important step towards the FAO World Program of Marine Resources Research.

Examples of the fundamental bearing of such appraisal refinements on such work and its use include the following:

- (i) Demographers and others with related interests need to know with greater precision the capabilities of marine living resources to contribute to the overall nutrition of mankind, particularly in respect of animal protein and oils, algins, etc.
- (ii) Funding agencies concerned with fishery development, such as World Bank, United Nations Development Programme, FAO, and numerous national agencies and entities require greater precision in such resource appraisal in order to allocate rationally their efforts as to scope, scale and priority.
- (iii) The whole program of work of the FAO Department of Fisheries requires continued improvement in precision of resource appraisal in order to increase the efficiency and design of almost all its aspects, and the same is true of national agencies and other entities involved in fishery development and management.
- (iv) The scientific community engaged in marine research requires continual increase in precision of such resource appraisal in order that it can guide its fields of enquiry with greater effectiveness.
- (v) The world community and the Member Nations individually must expect to be faced with a steady and sharp increase both in number and complexity of problems related to fishery jurisdiction and the rational management of fisheries. These problems cannot be solved until the appraisal of world ocean living resources is brought to a higher level of precision both generally and in detail.

- (b) The Committee would expect the Department to include the following methodology, inter alia, in its further work:
 - (i) Extend the present IWP report as far as possible through staff knowledge, literature search, and other means.
 - (ii) Circulate such provisional report broadly to regional fishery bodies and individual experts for their critical review and further inputs.
 - (iii) Use such services of consultants in particular aspects of this project as may be needed and can be afforded.
 - (iv) Have the report at this stage of its development ready for publication as a part of IWP.
 - (v) Indicate in this published report, in detail, areas of ignorance, both as to data and methodology, which prevented a satisfactory degree of precision and recommend steps which might be taken to remedy these needs.
- (c) ACMRR would expect to review in detail the preliminary publishable report for IWP when available. It would undertake this review, not only to comment on the completeness of the report with respect to existing knowledge but also to recommend ways in which improvements could be effected in the accumulation of knowledge and the understanding of these matters. Therefore the Committee believes that stimulation of work is required in the following fields, among others
 - (i) An assessment of methodology, such as egg and larvae surveys, acoustic detection, etc.
 - (ii) A specific study of a particular sea area where good data with respect to primary productivity of the ocean and fishery yield statistics coincide with heavy fishing effort over a broad range of resources and trophic levels with a view to elucidating the relationship between input and takeout in such a system.
 - (iii) Further elucidation of the processes by which energy is converted and, with matter, transmitted among trophic levels in the ocean to its points of end use.
 - (iv) A further development of the concepts involved in the use of marine living resources for instance, as between conventional and non-traditional uses of living resources and the effect of decisions reached on the rational management of fisheries.
 - (v) Further study of the feeding of fish both as regards the actual composition of the food of the possibly important fishery species (phytoplankton, zooplankton, fish, etc.) and the quantitative relation between food consumed and potential yield of predatory fish.
- (d) The Committee recognized the importance of physical processes leading to enrichment of the surface layers as a factor in assessing marine resources. It considered that the nature of such processes and the biological consequences were not widely understood. Therefore, the Committee recommends that an attempt be made to assemble and publish basic papers on the physical processes of enrichment, the biological consequences of this enrichment, and the effect on the abundance of marine living resources.
- (e) The Committee believes that prosecution of this program of marine resource appraisal is a matter in which regional fishery bodies can play an important role.

3.2.1 ACMRR Working Party on Egg and Larva Surveys *

The report on the fisheries resources aspects of IWP, and the discussions which followed in ACMRR noted that stimulation of scientific work is required in certain fields of methodology such as egg and larva surveys and acoustic detection. Some of these aspects are under consideration by the ACMRR Working Party on Speedier Estimation of Fish Abundance, and by the FAO Expert Panel for the Facilitation of Tuna Research - Working Party on Methods of Collecting Larvae. In view of the intensive research proceedings on the sampling of eggs and larvae, the Committee considers it timely to review methodology and progress in this field, so as to permit a more objective assessment of its potentialities, and recommends the establishment of a Working Party with the following terms of reference:

- (i) to define the potentialities and limitations of surveys of the distribution and abundance of young fish in comparison with other methods of exploration and stock assessment - for: exploration of new fish resources; studies of life histories of fish; estimates of size and spawning stock; forecasts of year class strength.
- (ii) to examine the literature for material that could be used for these purposes, especially for estimation of the abundance of the parent stock.
- (iii) to advise on appropriate gear and its handling for sampling in a quantitative manner, eggs and larvae of various kinds of fish. Full use should be made of the deliberations of international working groups engaged in similar problems.
- (iv) to report on the availability of material and data on eggs and larvae already collected but not yet fully utilized for fishery purposes. Special attention should be given to the material collected during large international expeditions such as NORPAC, Norwestlant, IIOE, ICITA and CSK, the Barents Sea young fish surveys, to surveys under UNDP(SF) projects, and to reviewing the problems involved in analyzing data collected incidentally to other studies.
- (v) to advise on the appropriate planning of surveys and on appropriate analysis and presentation of the material.

The Committee recommends that the Working Party should consist of about six experts and authorises the Chairman, in consultation with the Secretariat, to appoint the Working Party from a list of suitable experts based on proposals from members of the Committee. The Committee also suggests the inclusion of one member each from the ICES/SCOR/UNESCO Working Group on Plankton (Prof. G. Hempel, Kiel) and the Working Party on Methods of Collecting Larvae set up by the FAO Expert Panel for the Facilitation of Tuna Research (Mr. W.M. Matsumoto, Honolulu). The work of the group should be done, at least initially, by correspondence. At a later date a session might be required. A progress report should be made available before the next session of ACMRR.

3.2.2 Relations between fish stocks and upwelling areas

The IWP Working Group on Marine Resources Appraisal, when discussing how to improve the estimate of potential yield obtained from data of primary production, identified some fields in which stimulation of studies was required. The Committee (section 3.2) endorsed that view and pointed out that comparative studies of particular sea areas where good data on primary productivity and fishing yield statistics coincide, particularly some upwelling areas

(e.g. Peru, Benguela), should be promoted with the view to obtaining the replies to two specific questions: what is the magnitude of fish stocks in the second and third trophic levels in the main upwelling areas and what is the nature of the relations between fish stock and primary productivity in each or any of the upwelling areas. In this regard, the attention of the Committee was called to the Symposium on Upwelling Areas organized in conjunction with the Second International Oceanographic Congress. It was noted that the papers submitted to that Symposium were never published and that it would be desirable to ascertain the possibilities of their publication. The suggestion was also noted that a seminar sponsored by UNESCO/IOC and FAO might permit analysis of the questions raised by the IWP Working Party. Some members felt that many symposia on upwelling had been organized in recent years, that consideration should be broadened to include other processes of enrichment of the surface layers, and that it would be most useful to request selected experts to prepare comprehensive essays on present knowledge of physical, biological and fishery aspects of enrichment, for publication in a single volume by UNESCO and FAO.

The Committee recommends that the Secretariat bring this item to the attention of the UNESCO Secretariat and explore the best action required.

3.3 FAO Regional Fisheries Councils and Commissions

The Committee had before it the report of its Working Party on FAO Regional Fisheries Councils and Commissions appointed by the Director-General in response to Recommendations ACMRR/2/Rec.14 and ACMRR/3/Rec.1. It noted that the Working Party had been unable to complete its editing of the text of this report and in particular that the Working Party wished to modify the text with respect to:

- (i) the use that might be made of international institutes in connection with the programs of resources research with which these bodies are concerned;
 - (ii) the allocation of area of responsibility to each body; and
 - (iii) certain financial aspects of the operation of these bodies.
- (a) The Convener of the Working Party informed the Committee that it was only by an oversight that the report contained no direct reference to international research and training institutes and units, as the Working Party had discussed these at some length. Theoretically a group of countries could effect important economies by arranging for the conduct of research of common interest in a single unit and such an arrangement could be of especial advantage to a group of developing countries to each of whom the cost of setting up a national institute might be prohibitive. Such an institute could very well offer common services in computing, in the provision of research vessel time, in training, and in standardization of techniques; it could very well be a precursor to national institutes in its area and, by providing adequate facilities, prove attractive enough to restrain the drift of scientists towards the centers of research of developed countries. Against these advantages must be weighed the possibility that such an institute could drain away funds that otherwise might go to national institutes and thus might prejudice the prospects of setting up the national institutes; also there could be expected to be considerable difficulties in selecting the problems for investigation.

The Committee recognizes the validity of these observations and noting that the Working Party has failed to reach a conclusion on the matter, considers that some further study of the subject should be undertaken.

The Committee also considers that the training element of this proposal is especially important and should be considered in conjunction with plans for regional training centers which have proved extremely useful to FAO.

- (b) With respect to the area of responsibility and to financial aspects mentioned above, the Convener reported that the Working Party felt that the emphasis on what was written ought to be shifted somewhat. The Working Party wished to stress the importance of recognizing that the geographic concept of "land-based" bodies, under which the FAO bodies had been formed, no longer held good as a general principle in the situation now prevailing with highly mobile fishing fleets. It also wished to give greater emphasis to its remarks on the importance of adequate financing of the activities of these bodies.

The Committee was appreciative of the Working Party's detailed analysis of the work of these bodies and its diagnosis of certain defects and disabilities manifest in their activities. Some members of the Committee considered that certain observations made by the Working Party were open to question although not to the extent that the report could not be endorsed by the Committee as a basis for immediate action.

In particular the Committee recognizes that the following matters would merit further study:

- (i) The principles to be observed in setting boundaries to the geographic area for which each body is responsible;
- (ii) The principles that might be followed by these bodies in establishing subsidiary bodies for particular subjects and sub-areas; and
- (iii) The principles these bodies might follow in determining the relative weight to be given to each matter brought to their attention, and in choosing courses of action appropriate to each subject.

The Committee also notes that the Working Party has been unable to review the work of the Regional bodies of the North Pacific and expresses the hope that the Working Party will be able to repair this omission when revising its report.

- (c) With these observations the Committee recommends the Working Party's report to the attention of the Director-General for such action as might seem appropriate. In particular, the Committee recommends that the Working Party's report, together with this section of the ACMRR report, be made available to COFI and its subsidiary bodies at once and without awaiting the revision proposed by the Working Party.
- (d) The Committee also proposes that the Working Party be continued with the membership it had when writing the report, for the purpose of completing its report by correspondence in consultation with the Executive Committee of the IPFC.

During the discussion the Committee gave particular attention to the matter of expert advice that could be given to Member Governments by FAO staff of regional offices. The Committee notes and endorses the observations on this matter made by the IPFC at its 12th Session and strongly recommends the proposals there set out for the attention of the Director-General.

3.3.1 CARPAS Revision of Statutes

The Secretary called the attention of the Committee to the CARPAS recommendation, adopted at its Third Session (Montevideo, Uruguay, April, 1966), requesting revision of the Commission's statutes in order to obtain the active cooperation of all the countries whose fishing fleets frequent the CARPAS statistical area or undertake fishery research in that area. This request would be considered by the forthcoming session of the COFI Sub-Committee on the Development of Cooperation with International Organizations concerned with Fisheries.

The Committee considered the request for revision of statutes from the point of view of marine resource research requirements.

Following the general principles defined by the ACMRR Working Party on FAO Fisheries Councils and Commissions, the pooling of information and cooperation of all countries which have vessels operating in the same area or fishing on the same stocks is essential for rational exploitation and management.

Accordingly, the Committee strongly recommends the endorsement of the CARPAS proposal for amendment of the statutes.

3.3.2 Eastern Middle and Southeastern Atlantic

In this area there exists an FAO regional body, the Regional Fisheries Commission for Western Africa (RFCWA) but it had faced difficulties which prevented its effective operation. Nevertheless, the important marine fishery problems emerging in this area as fishing intensifies and diversifies, are very urgent and an effective intergovernmental machinery is needed for their solution. The studies under ICITA, GTS, and the UNDP(SF) projects executed by FAO in the area are contributing valuable information about the resources, and the Committee commends opportunities being taken by FAO to promote and coordinate investigations, develop national research units in Africa, and arrange for regular contacts between scientists in other interested countries.

The Symposium on Oceanography and Fisheries Resources of the Tropical Atlantic convened in Abidjan in 1966 under the sponsorship of UNESCO, FAO and OAU/STRC had demonstrated the benefits of joint action between the various agencies concerned and had resulted in a useful evaluation of the existing state of knowledge about the resources of that area. Further investigation had been initiated recently also in the temperate Southeastern Atlantic by several other countries.

- (a) The Fourth FAO Regional Conference for Africa, held in Abidjan in November 1966, had, on the basis of information from the Symposium and of a review of the situation by the Department of Fisheries, requested that the ACMRR give urgent attention to problems in the tropical and south eastern Atlantic "where the resources are being subjected to greatly intensified and as yet undisciplined exploitation both by the developing African fleets and by fleets from non-African countries".

The Committee, looking at this matter from the scientific point of view, agrees with the Regional Conference which had emphasized that it is "the responsibility of all countries fishing a common resource to contribute to investigations directed towards the assessment and elucidation of the effects of fishing on it and to participate in international agreements for its conservation on a scientific basis", and that "the approach to this problem should be determined by the de-

lineations of the resources." In this connection the Committee agrees that the Southeastern Atlantic and the Eastern Tropical Atlantic, approximately southwards and northwards of latitude 6°S, presents different resources and fisheries problems, and, in addition, there is in the northward area, a division of resources from the point of view of stock assessment at about latitude 15°N.

The Committee was informed that this subject was on the Agenda of the COFI Sub-Committee on the Development of International Cooperation and that this Sub-Committee might be expected to make specific proposals for action by COFI at its Second Session. In this situation the Committee is ready to arrange to provide such further expert advice as may be needed to guide international action, and accordingly proposes to establish a Working Party on the Resources of the Sub-Tropical and South-eastern Atlantic. It further recommends that the membership and terms of reference of this Working Party be determined by the Chairman in consultation with the Secretariat in the light of the subsequent actions by COFI.

- (b) With respect to the RFCWA the need was recognized, as pointed out by the Regional Conference, for the representatives of the West African countries to meet to discuss their own problems and jointly to develop their fishery policies. The Committee looks forward to learning, in due course, the recommendations to this end by the forthcoming FAO Technical Conference on the Fisheries of West African Countries, with specific reference to the alternative actions of revising the statutes of the RFCWA, establishing a replacement body for it, or conducting regular ad hoc meetings on specific subjects of common interest.
- (c) The Committee emphasizes that in the work of FAO to promote fisheries development in West Africa, and in the broader tasks of promoting national development and conservation of the resources in question, a strong backing of the FAO Regional Office in West Africa from Headquarters, and more support both from FAO and UNDP of the national and regional field projects is necessary.

3.4 Fisheries Resources Cooperative Investigations

Following the introduction of this subject by the Secretariat, discussion ranged over a wide field. Many of the advantages for fisheries resources research, such as cooperative surveys organized under IOC and other international bodies, were appreciated. In recent years several opportunities had been taken of conducting regional surveys using international funds - e.g. GTS and the Regional Sardinella Survey under FAO/UNDP(SF) activities.

In addition, however, opportunities might be taken of securing an even more effective input for such investigations by pooling national resources of both advanced and developing countries in cooperative efforts. This might be more practicable than hitherto in view of the increasing numbers of large ocean-going fishery research vessels in service, and the development of direct and speedier methods of estimating fish abundance. The need for rapid and massive action was accentuated by the requirements of resource data as criteria for investment through international development banks.

The problems peculiar to the possibilities of international cooperation in a project designed to lead directly to commercial exploitation (problems of national self-interest, perhaps especially in situations where both developing and more advanced fishing countries are concerned) also had to be acknowledged. In some circumstances it was envisaged that the possibilities for such cooperation might most easily arise within an existing regional body; in others the primary stage might easily be undertaken on the initiative of one or more advanced countries. In either example, a

prior examination would seem necessary of the kinds of common exploitation in mind which might provide reasonable inducement for the countries likely to be concerned. From all points of view the most careful planning would be essential, in which priorities (scientific and technical and relating both to the fish stocks and their environment) would have to be clearly established. Recognizing that the possibilities of such cooperative resource surveys should be of interest to COFI, and that the experience and views of COFI would be of great value as regards a realistic assessment of the political and economic possibilities, the Committee recommends that the attention of COFI be drawn to this preliminary discussion, that the Fishery Resources and Exploitation Division be requested to explore the possibilities further, including the possible benefit with respect to training of scientists and technicians, and that a more detailed analysis be prepared for the Committee's next session.

3.5 General Review of Program of Work and Budget of the Fishery Resources and Exploitation Division for 1968/69 and Future Biennia

A feeling of deep concern about the inadequacy of the staff and financial resources available for the work relating to the Committee's terms of reference, such as had been expressed in previous sessions, was apparent in many discussions during the present session and during the Session of its Working Party on Regional Fisheries Councils and Commissions, Rome, 9 to 13 January 1967. (Section 3.3)

This concern became focussed on the discussion of the proposed Program of Work and Budget for 1968/69. It was stressed that the Division concerned with marine resources research continues to have wholly insufficient funds and staff available for the tasks it has been given, quite apart from those which it may have to face after the Program of Work and Budget has been approved by the 1967 Conference.

Nor is there any suggestion that in this respect the Division differs from the other units of the Department of Fisheries, nor indeed from the other operative areas of FAO. There is, however, an urgency for considerable expansion in marine resources research which demands immediate attention. The simple fact is that fisheries resource problems, actual and potential, are increasing much more rapidly than the modest increases in staff and operating funds it has been possible to provide under the Organization's Regular Program so far to support this area of work in the Department. The difficulties that the Fishery Resources and Exploitation Division finds in this respect are aggravated by the fact that this inadequate staff is called upon to devote most of its time to the servicing of the greatly increased field program of marine resource assessment and exploitation. It is thus unable either to give the attention that these important field activities deserve in terms of Headquarters support, or to develop effectively the global and regional activities and general services which are of concern to all member nations, and which, as the Committee has emphasized in the past, are essential also to the well-being of the field programs.

The inadequacy in resources and staff is seen at all levels, from their inadequacy for the immediate servicing of the Committee itself (despite the devoted labour of those concerned),^{a/} through the inability to service adequately or to fund several of the activities recommended by the Committee at previous Sessions to the widespread failure of the Department to meet calls on its services in various regions; i.e. those (i) specified in the Report of the Working Party on Regional Fisheries Councils and Commissions, (ii) instanced from the personal experience of members in their associations, and (iii) shown in particular fisheries or problems of actual or potential importance (e.g. shellfish and marine culture). While funds for resource projects were inadequate in general, the Committee was particularly concerned that frequently there should be inadequate funds for travel, especially for the travel and employment of non-

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On this point of servicing the Committee, proposals are being made to the Director-General which themselves must lead to slight additional expenditure.

staff members on whose services it is inevitable that the Department should need to depend more and more, to complement the efforts of staff. The Committee was similarly concerned that resources for the provision of statistics, especially statistics relating to catch and fishing effort, continue to be insufficient. Lastly, there seemed a need for support in the Division at what was called the "middle management" level, so that senior professional staff could devote more of their time to important substantive problems.

In conclusion the Committee wishes to stress the "common property" nature of most of the resources with which the Department is concerned, and the heavy responsibility which this peculiar characteristic imposes on the Committee, the Department, the Organization and, indeed, on all the nations of the world. It is a "common property" extending in one form or another over some three-quarters of the earth's surface. Much of it is very vulnerable to modern forms of exploitation. In the opinion of the Committee it is essential that increased funds be made available if critical over-fishing situations in several parts of the world are to be avoided, with the consequential jurisdictional problems, and especially if the Organization is to meet its responsibilities in ensuring that adequate scientific and technical information are provided as a basis for the rational solution of existing and emergent problems. Otherwise the world will face a succession of situations such as that concerning the Antarctic whale fisheries for which research action, taken at the last minute, might well have been too late. Furthermore, better knowledge of the distribution, magnitude and characteristics of the relatively unexploited resources is urgently necessary as a basis for properly directed investment to expand existing fisheries or start new ones, especially in view of the rapidly-increasing intervention of the International Development Banks in this sphere.

The Committee recognizes that international action thus is urgently needed with respect to: (i) the assembly of facts on which to plan fisheries development and to base the management of fishing; (ii) the development of institutional forms for the identification and consideration of problems in the rational utilization of resources. For these purposes the Committee agrees that funds should especially be made available for the Department's work on (i) appraisal of marine resources; (ii) statistics economic planning.

The Committee accordingly recommends that the Director-General urge member governments to supplement the funds available to him with these particular objects in mind.

4. DEPARTMENT OF FISHERIES PROGRAM OF WORK IN THE FIELD OF MARINE RESOURCES

4.1 Intelligence Activities ("Current Contents in Marine Science")

The Committee was informed of the details in the production of this new periodical, which is being issued in response to a recommendation by the joint SCOR/ACMRR Working Group. The Committee reaffirms the importance of such a service in keeping scientists abreast of new developments in their field.

Consideration was also given to the desirability of increasing the number of primary journals significantly beyond 50 titles, and FAO is requested to study the budgetary implications of such an increase in the number of journals covered, and to take a decision accordingly.

The Committee further endorses the Secretariat's point of view in continuously amending the coverage and contents of the journal and resolves that FAO seek advice by correspondence from the Committee members, as well as from SCOR in the up-dating of the list of primary journals.

In view of the interest of SCOR both in the initiation and the development of the periodical, the Committee recommends that the Executive Committee of SCOR be invited to act also as an advisory body in the up-dating of the list of primary journals.

4.2 Training and Education (Sea-going Seminars)

The Secretariat informed the Committee that some success had been achieved in organizing on board training as suggested by ACMRR at its last Session. Confirmation has just been received, that as a result of the approach made by FAO, a research vessel might be made available next summer under UNDP(TA), through the Government of the U.S.S.R., for a Sea-going Seminar in the Mediterranean of about one month's duration and open to the participation of about 20 fellows. Various members pointed out the importance of sea-going Seminars and training on board, particularly for scientists from developing countries.

The Committee notes with satisfaction that Poland is also considering the offer of such facilities and of collaborating with FAO in similar projects. The Committee requests that the Secretariat make exploratory approaches to ascertain the possibilities of organizing similar cruises in other areas, particularly with the assistance of Japan and the U.S.A.

4.3 International Meetings

The Secretariat informed members that it had been unable to prepare a review, as requested by the Committee, to provide an objective basis for discussion of priorities to be given to subjects and species reviews and timeliness of World Conferences. The Committee recognized that Symposia and other international expert gatherings serve as a forum for the exchange of items and experiences of fundamental value for scientific and technological development. Nevertheless, only limited funds and personnel, either national or international, are available to support the organization of, and attendance at, such meetings. Consequently, the most careful selection of priorities should be made.

The Committee was aware that with the limited staff available it is difficult for the Secretariat to cope with further duties, such as the preparation of this suggested review. The Committee notes with pleasure the offers made by Drs. Kesteven and Ricker to assist in this task. The Secretariat welcomes this proposal and suggests that in order to facilitate procedure, members of the Committee should communicate their views on the matter to the Secretariat which would ensure transmittal, together with pertinent documentation, to Drs. Kesteven and Ricker for study. The Committee agrees with this procedure.

4.3.1 Symposium on Tropho-Dynamics of Marine Communities

The Committee was reminded of the present status of planning for this Symposium. The Report of the Working Party had been considered by the co-sponsoring bodies, ICNAF, IOC and ICES, and made available to IBP. As requested, ICES had arranged to provide facilities for the Symposium, and had suggested that it be held under its auspices at a suitable Danish University centre, during the second half of July 1968. ICNAF had undertaken to contribute towards duplication of documents (and/or publication, should commercial publication prove impossible), and UNESCO towards travel expenses. FAO would contribute tri-lingual interpretation and possibly also towards travel. Recent developments included the concurrence of ICNAF in the proposals for time and place (and an indication of interest in publication by a prominent University Press).

The Committee agrees that ICES should be requested to proceed along these lines, while maintaining contact with the others concerned. Dr. J. Steele, the Convener, had informed the Secretariat of the strong view of his Working Party that a simpler and more appropriate title for the Symposium would be "Marine Food Chains", with which the Committee concurs. It also took note of the advice given by ICES with regard to the proposals for the conduct of the Symposium, although some members foresaw dangers in requesting contributions too early, with the consequent prospect of a long delay before

publication. The Committee agrees that these various points should be communicated to the members of the Working Party and recommends its re-appointment so as to permit further the development of their proposals for the preparation and conduct of the Symposium. As a step towards more definite arrangements, the Committee approves the immediate preparation of the brief draft prospectus as submitted by Dr. J. Steele.

4.3.2 Meetings - Second FAO Conference on Fishery Research Craft

This Conference was planned for the latter part of 1967 and would probably be held in the United States. It was emphasized that the Conference would be concerned with problems and situations relating to fish research craft, rather than with descriptions. It would cover the fields of naval architecture and engineering, and also provision of design criteria for research, including exploratory vessels, from the point of view of the users; to experience with existing vessels as a basis for improved design; operational aspects; conduct of fishery research from vessels other than fishery research vessels (including oceanographic vessels and fishery training vessels); the uses for fishery research of craft other than surface vessels, and the uses of fishery research vessels as platforms for other kinds of marine research. It was pointed out that the subject of this Conference was closely related to the discussion on Fishery Exploration (Section 4.4) and reference was made to the need for fishery research vessels that could operate several kinds of fishing gears as well as being fully equipped with modern electronic and oceanographic equipment.

The Committee agrees to make comments on the draft program to the Secretary of the Conference, by correspondence, at an early date, and requests that its attention be drawn, at the Fifth Session of the Committee, to the results of the Conference, which should be of considerable importance to the developing countries, many of which are now acquiring fishery research vessels of various kinds and at a time when the more advanced countries are constructing a new generation of research vessels.

4.4 Appraisal of Marine Resources and Conservation - Exploration and Charting of Resources

With the increased participation of government agencies, research institutions and large industrial enterprises in exploring new areas and prospecting for stocks on a broader scale than hitherto, there was a need for an examination of the methodology of conducting such surveys. FAO is now increasingly concerned with the problem through the initiation of Special Fund fishery projects in which exploratory and experimental fishing play an important part. The several factors that have to be taken into account in an attempt to improve survey methods include arrangements on exploratory vessels for the operation of several different kinds of fishing gear, particularly trawls, purse seines and drift-nets, the increased use of echosounding equipment for determination of the distribution and abundance of fish stocks (see the Report of the Working Party on Direct and Speedier Estimation of Fish Abundance) and the need for associated biological and environmental observations.

- (a) The Committee believes that it is timely to begin a general appraisal of the methods of exploration with a view to formulating proposals for a more effective utilization of available research vessels and equipment. It accordingly recommends the establishment of a Working Party on Fishery Exploration and Charting, and suggests that Dr. Lee Alverson be invited to act as Convener. The Committee further recommends that the other members of the Working Party be nominated by the Chairman in consultation with the Convener and the Secretariat, taking into account the names suggested by members of the Committee and bearing in mind the need to call upon the various

groups participating in exploration.

The Committee considers it most desirable in this connection to draw upon the experience, in this matter, of scientists from countries not members of FAO and recommends that in particular, an expert from the Soviet Union be associated with the Working Party.

- (b) It was pointed out that exploratory fishing was carried out to provide information about the distribution and magnitude of stocks as a basis for determination of Government policy for the development of fishing industries and also to provide information of direct use to fishermen in their daily task by finding and catching fish. In this latter connection there seems a need to improve the flow of data from fishery exploration and research into the production of fishing charts. In several countries attempts were being made to improve this process, and studies were also being made of the visual presentation aspects of this problem. There is a real need to ensure that digests of data coming from exploration under Special Fund projects find their way to the fishermen, and in this connection the Committee considers that FAO has a responsibility, as Executing Agency for these projects, to promote the preparation and publication of fishing charts in the relevant areas. The FAO Fishery Data Center would be expected to have an important function in this regard. The Committee, therefore, proposes that the methodological questions relating to the pooling of such information and preparation of charts should be included in the terms of reference of the Working Party.

4.4.1 FAO Fisheries Data Center

The Secretariat gave a Progress Report on the FAO Fisheries Data Center, which is serviced by the Fish Stock Evaluation Branch. FAO has maintained contact with WDC(A) to work out compatible procedures. Discussions will also be held with WDC(B) as soon as possible. As a result of the Director-General's communication with countries which participated in IIOE to encourage them to deposit promptly data in WDC's and FAO, some fisheries data have already been received. FAO intends to issue from time to time indexed catalogues of data deposited in the Center and to develop procedures and conditions under which copies of selected data can be made available on request. The Committee then considered the question of facilities and procedure of the FAO Fisheries Data Center.

Recognizing, in relation to the staff and the resources available, that for the time being the evolution of work of this Center must be restricted to the most essential tasks in the first place, and that it would develop as resources permit, the Committee commends the preliminary steps that have been taken and requests the FAO Secretariat to provide for the Secretariat of IOC an explanatory paragraph for insertion in Part 4 of the Preliminary Guide for the Exchange of Oceanographic Data, where the FAO Center is now listed as a "Specialized Center".

4.4.2 Speedier Estimation of Fish Abundance by Acoustic Methods

Noting with appreciation the progress report of the Working Party on Direct and Speedier Estimation of Fish Abundance the Committee commends the Working Party on its work.

- (a) The Committee was informed of the ICES proposal for a training course in the Use of Acoustic Methods in Fisheries Research. The Committee recommends that FAO offer its full support to the project.

- (b) The Committee requests the Working Party to continue its work with respect to the completion of a training manual on the physical principles and use of acoustic fish detection equipment in fisheries work, as planned.

Following the completion of the manual, and in view of the conclusion of the Working Party that "acoustic fish detection techniques have the greatest potentialities", the Committee decides that the study should be continued thereafter with attention devoted entirely to these techniques. At that time the membership of the Working Party should be reconsidered and the Chairman and Secretariat are requested to make this change, keeping in mind that a Working Party of six to eight individuals is an appropriate size.

- (c) The Committee noted the formation of a Working Party on Underwater Sound for Tuna Research, recommended by the Expert Panel for the Facilitation of Tuna Research and considered the possibility of combining the two Working Parties. Although certain administrative conveniences and fiscal savings might result, the Committee recognized that the objectives of the two Working Parties differ to such a degree that combination would not be desirable. In order to ensure exchange of information between the two Working Parties, the Committee recommends that there should be some overlapping of membership.

4.4.3 Special Chapter on "Fisheries Management" for the "State of Food and Agriculture", 1967

The Committee took note of the Department's draft of this chapter. It considered that this review formed an important document at the present time when the problems of fishery management, especially in the international field, are increasing in extent and urgency. The Committee agrees that the document presented to them gives a very clear outline of these problems and should therefore be published separately, as soon as possible and given a wide circulation in fisheries and oceanographic circles, independent of the fact that it will also be used as a contribution to SOFA. Members of the Committee were invited to send their comments on the draft to the Secretary, to arrive not later than 31 January 1967 so that appropriate account could be taken of them in the final version.

4.5 Report of the Working Party on Fishermen's Charts and Utilization of Synoptic Data

The Committee adopted the Report of the Working Party on Fishermen's Charts and Utilization of Synoptic Data and asked the Secretary to convey to the Working Party its thanks and congratulations on the high standard of the Report. The Committee noted that the Report includes various recommendations which can best be implemented by the IOC and WMO and that WMO in its turn required from ACMRR certain information for the planning of the World Weather Watch which can best be provided by this Working Party. It noted further that in various parts of the world, considerable efforts are being made in the field of physical environment prediction, and that in due time a working party might review the progress of this activity in relation to marine resources research.

The Committee therefore recommends that:

- (a) the report of the Working Party on Fishermen's Charts and Utilization of Synoptic Data be sent to IOC and WMO for their consideration and for the implementation, where possible, of those recommendations falling within the scope of those organizations;

- (b) the Working Party study as a matter of urgency World Weather Watch Planning Report No. 15, in particular examine the adequacy of the products contained in Table 2 of that report from the point of view of fishing operations; report on their findings on this Table to the Secretary by 15 March 1967 so that WMO can receive them by 1 April; determine the meteorological problems which are of interest to fishermen and which require further research;
- (c) in preparing the final version of the report, the Convener should consider the comments on the first draft received from members and other interested organizations;
- (d) the Working Party be disbanded after it has completed the editorial work on its report and it has implemented recommendation (b) above.

4.6 Marine Pollution and its Effects on Fishery Resources

The Committee noted that as a result of FAO initiative, considerable advance had been made in obtaining information, through the circulation of the ACC Questionnaire, about the kinds and occurrence of pollution, the investigations on this matter which were in progress and the views of governments on what now should be done especially at the international level. It was informed that the ACC Sub-Committee on Marine Science and its Applications would be considering an analysis of the responses to the Questionnaire at its forthcoming session (March 1967), and agreed that this represented an encouraging example of close collaboration between various Agencies on a matter of common interest, with a view to bringing about their concerted action with respect to this problem.

- (a) The Committee also noted with pleasure that the IOC on advice of ACMRR had taken steps to further work on the oceanographic aspects of pollution through the establishment of a Working Group of member countries. Advice on the terms of reference of this IOC Working Group and preparations required for its meeting had been requested from SCOR and ACMRR, whose officers had responded by proposing the establishment of a joint Working Group of experts, the ACMRR nominees being Mr. A.J. Lee and Prof. P. Korringa.

The report of this Working Group was submitted to the Committee for approval and would also be considered by the forthcoming meeting of the SCOR Executive; it was understood that it had been made available in advance to the IOC Bureau and Consultative Board which could also consider it in the near future.

The Committee agrees that certain drafting amendments should be made in the annotations, paragraphs (b) and (c) to the proposed Agenda Item 7 for the IOC Working Group Meeting to make it clear that it was intended that "oceanographic" research, and exchange of information on the "oceanographic" aspects of the effects of marine pollution, were intended to be the subjects of this item.

The Committee expresses its willingness to continue, if required, to assist in the IOC activities in this field.

- (b) The Committee noted that the draft FAO Program of Work and Budget for 1968/69 included the conduct, in 1969, of a World Scientific and Technical Conference on Marine Pollution and its Effects on Fishery Resources and Fishing Activities. It considers that the careful preparation needed for this important conference would be facilitated by the assistance of a small group of experts and accordingly recommends the establishment of a Working Party and the appointment to this group of Mr. A.J. Lee (Lowestoft, U.K.), Prof. P. Korringa (Netherlands) and about four other members to be proposed by the Chairman in consultation with the Secretariat, one of these being the consultant FAO proposes to invite to assist in the preparation of background papers.

Other Agencies (especially UNESCO, IMCO, IAEA) and international bodies (especially IAWPR and SCIBP) concerned should be invited to nominate representatives to participate in the activities of the ACMRR Working Party.

The ACMRR Working Party, in considering the scope of the Conference should take into consideration the proposal made by the joint SCOR/ACMRR Working Group concerning the definition of pollution, and also its tabulation of the major categories of pollution and of its effects. The Committee also requests the Secretariat to bring to the attention of the ACMRR Working Party any further activities that FAO might propose to undertake in this field, as a result of the considerations on the subject by the ACC.

5 COORDINATION AND COOPERATION WITH OTHER BODIES

5.1 UN Resolution on the Resources of the Sea

The Committee had before it a request for advice from the Director-General of FAO. The Director-General referred to the Resolution on the Resources of the Sea adopted by the General Assembly of the United Nations on 6 December 1966 [A/RES/2172(XXI)]. FAO (with COFI) and UNESCO (with IOC), together with other agencies such as WMO, were envisaged in the Resolution to cooperate with the Secretary General of the UN in the preparation of a comprehensive survey of activities in marine science and technology undertaken by members of the UN family of organizations, various member states and inter-governmental organizations concerned as well as by universities, scientific and technological institutes and other interested organizations. In the light of this comprehensive survey it was intended to formulate proposals for:

- (i) Ensuring the most effective arrangements for an expanded program of international cooperation to assist in a better understanding of the marine environment through science and in the exploitation and development of marine resources, with due regard to the conservation of fish stocks;
- (ii) Initiating and strengthening marine education and training programs, bearing in mind the close inter-relationship between marine and other sciences.

In the formulation of these proposals only FAO (with COFI) and UNESCO (with IOC) were expected to cooperate with the UN.

The Director-General desired advice from ACMRR, within its terms of reference, on what the methods, scope and content of this comprehensive survey should be.

The Committee recognized that the action contemplated in the UN Resolution could be valuable in improving international cooperation in regard to the study of the sea and its resources. As regards marine fishery resources the Committee recalled, however, the recent action of the FAO Conference in strengthening the fishery activities of FAO and its role in international cooperation through the establishment of the Committee on Fisheries and the Department of Fisheries. A promising start had been made in this respect and it was most important that this process of strengthening continue at least at the rate envisaged by the Director-General at the time of the 13th Session of the FAO Conference.

Because of the close inter-relations between the marine fishery resources and their environment and of the respective roles of FAO and UNESCO in regard to these, the most effective collaboration was desirable between FAO and UNESCO. The Committee itself had an important part to play in ensuring this because of its advisory status vis-a-vis FAO and the IOC. The aims of the UN Resolution as far as the study of marine fishery resources and their environment was concerned could, in the near future,

best be forwarded by the further improvement of the collaboration between FAO and UNESCO rather than by some entirely new arrangements.

The Committee, moreover, noted the rapid increase in knowledge of the intimate relationships between the dynamics of the atmosphere and the ocean and the growing need for increased cooperation and coordination of planning and work among scientists concerned with both the atmosphere and the ocean. It was indeed essential that marine and atmospheric research should be expanded sharply by the world community so that the problems which were arising so rapidly in the development and management of fisheries could be brought to solution. Again, because of the close interrelation of marine resources and their environment, the advice desired by the Director-General could best be given by a joint working party of the ACMRR and SCOR.

- (a) The Committee accordingly recommends that the Director-General request the President of ICSU to solicit the cooperation of SCOR with a view to the establishment of such a group. The members of the group should be nominated by the Chairman of ACMRR and the President of SCOR and should be appointed by the Director-General of FAO. The group should be representative of the various disciplines involved and should advise the Director-General on the scientific aspects of what the methods, scope and content of the comprehensive survey called for by the UN Resolution should be, insofar as the study of marine fishery resources was concerned. The group should be free to seek necessary information and advice from other sources, particularly from advisory bodies of other interested agencies. The group should report directly to the Director-General but its advice should also be available to the IOC and the Committee decides to draw the attention of the IOC Bureau and Consultative Council especially, to its views on this subject.
- (b) Although the Director-General had sought advice from the Committee only with respect to the conduct of the survey of activities, the Committee considers that it should express to him its views on certain wider issues implicit in the UN Resolution, especially with respect to Paragraph 3 of the Resolution.

The Committee recognizes that the proposals requested in Paragraph 3 of the Resolution are likely to have important influence on institutional arrangements for international activities in marine sciences and technology in the future, and on the arrangements under which the problems of rational resources use are examined and negotiated internationally. It notes, however, that whilst the Resolution provides on the one hand for the assembly of information on the status of knowledge of the seas and on activities to increase this knowledge, and on the other hand for the formulation of proposals for arrangements with respect to international cooperation, it did not provide for the assembly of information on the institutional forms and procedures under which international action with respect to the seas has been proceeding on an extensive scale for many years. The Committee pointed out that the experience in this field beginning with ICES in 1902, was extensive. It further pointed out that it had itself just completed the first stage of a study of these matters with respect to FAO's own regional fishery bodies and identified certain matters requiring further study. It considers therefore, that it is proper for it to draw the attention of the Director-General to this matter and to suggest to him that he request the Working Party proposed above to make some study of the following matters, and to collaborate with the Secretary-General's group of experts in its examination of these matters, namely:

- (i) Identification of problems in marine science and technology and related fields that require some form of international cooperation for their effective investigation and for the effective application of their results;

- (ii) Examination of the form of cooperation required and of their impact on the scientists and institutions concerned;
 - (iii) Examination of the manner in which existing international organizations deal with the problems and the forms of cooperation referred to above.
- (c) Furthermore the Committee referred to the technical and organizational changes taking place in world fisheries which are of unprecedented speed and magnitude. These changes are modifying not only the patterns of exploitation of marine resources but also the patterns of international relations in respect of both scientific and commercial interest and which are of considerable political significance. In consequence of these changes new ideas are emerging with regard to the theory and practice of fisheries management, at both national and international level. The Committee considers that if the industrial changes or the new ideas are ignored when formulating the proposals set out in Paragraph 3, a situation can arise in the future in which these proposals may be out of date when action is to be taken on them. Although the intention might be to deal with this aspect in another stage, the Committee considers that action in this respect should be initiated without delay and notes that for this purpose there is available to it a draft of a chapter of FAO's SOFA, dealing with the Management of Fisheries Resources, which by its clear and imaginative treatment of the subject, provides an excellent starting point for further study. The Committee therefore proposes to undertake a study of the matters set out in the SOFA chapter and to consider and advise on how the forms of international cooperation might need to be adjusted so as effectively to meet the need of these matters.
- (d) The Committee notes that the comprehensive survey of activities as well as the proposals to be formulated in the light of it were to be prepared with the assistance of a small group of experts to be selected as far as possible from the specialized agencies and inter-governmental organizations concerned. The Committee feels that the nomination of experts from among the advisors of the agencies and organizations should not be excluded. It also considers essential that the close cooperation of appropriate staff members be secured and that the relevant work of FAO, for instance the Indicative World Plan, the Analytical Compendium of International Fishery Bodies and the work of other international organizations concerned with fisheries which was being prepared under the auspices of COFI, be fully taken into account.

5.2 UNESCO

5.2.1 Symposium on Coastal Lagoons

The Secretariat informed members that FAO had offered to work with UNESCO in the preparation of the scientific plan and the organization for the proposed World Symposium on Tropical Lagoons. As however, the scope and coverage is different from that originally envisaged, and because the Symposium will be taking place in 1967, joint action by the two Agencies was found to be impractical. The representative of UNESCO reviewed the history of the proposal for the Symposium and indicated that the correct title was "Symposium on Coastal Lagoons, their Dynamics and Productivity" and that it would be held in Mexico in November 1967. The Secretariat informed the Committee that FAO would keep in contact with the sponsors of the Symposium, and would consider in the future, as a possible follow-up, a Symposium on Fisheries Resources of Tropical Lagoons and Mangrove Swamps. It was also noted that the results of the FAO World Scientific Conference on the Biology and Culture of Shrimps and Prawns would include items of relevance to this Symposium. It was also stated that a Symposium on Coastal Fisheries Culture was

to be held under IPFC auspices in 1970 and that the 1968 Session of the Council would consider the framework for this Symposium. The Committee points out that the attention of IBP should be brought to this Symposium which comes in their area of interest. In view of the projected UNESCO and IPFC Symposia, the Committee agrees that plans on the part of FAO for a follow-up to the Mexican Symposium should be deferred until a clearer view can be taken of the subject. It also agrees to have the matter placed on the Agenda for the next ACMRR Session.

5.3 WMO/World Weather Watch and Meteorological Service to Shipping

The Representative of WMO gave a brief explanation of the concept of the World Weather Watch and the questions on which advice was sought from FAO.

- (a) The Committee agrees that the FAO Secretariat should explore ways and means of promoting cooperation between operators of fishing fleets and WMO, for the purpose of securing upper air meteorological observations. It is also of the view that WMO should be encouraged, in cooperation with FAO and IOC, to promote the idea of providing for the incorporation of oceanographic (physical, chemical and biological) data in the observations taken by buoys set up for meteorological purposes; information on the characteristics of the surface layer and on the depth and changing position of the thermocline is of particular interest to fisheries. In developing its plans for observations from fixed platforms WMO should be encouraged to take, wherever possible, account of locations which are of strategic importance from the point of view of fishery oceanography.
- (b) The Committee notes that, within the framework of the World Weather Watch planning, WMO has devoted special attention to the subject of meteorological service to shipping and other marine activities. The Committee welcomes this initiative in view of the effect of meteorological factors on the economic aspects of the fishing industry. It notes in particular that World Weather Watch Planning Report No. 15 contains a tentative list of meteorological products which are thought to be required by shipping and other marine activities for the safe and efficient conduct of their operations. While realizing that the FAO Secretariat had already commented on this list from the point of view of fisheries, the Committee agrees that the list warrants further study, as a matter of urgency, by an ACMRR Working Party. Steps to effect this were taken under the item concerning the future work of the ACMRR Working Party on Fishermen's Charts and Synoptic Data. This same Working Party was also requested to attempt to list some of the more important meteorological problems which required further research from the point of view of fisheries. (See Section 4.5)

5.4 Scientific Committee on Oceanic Research (SCOR)

5.4.1 Future of the SCOR/ACMRR Working Group on Biological Data

The Secretary of SCOR informed the Committee that at the last meeting of SCOR most of its working groups were dissolved, but that this particular one had been maintained until the Executive Meeting, February 1967, pending the advice of ACMRR. In his opinion the SCOR/ACMRR Working Group, having accomplished a considerable part of its duties, should now be terminated in its present form and membership, so as to give the scientists and institutions concerned time to consider the implications of the report and WDC's and FAO to consider and implement such of its recommendations as was practicable at the present time. The ACMRR Secretary informed the Committee that he had discussed the matter with the Chairman of the SCOR/ACMRR Working Group, Professor G. Hempel, who had also stated that in his opinion, the Working Group should not continue.

The Committee expresses appreciation of the work done by this Joint Working Group, notes that important decisions await work in progress in several biological fields (especially on methodology) and recommends to SCOR that the joint Working Group be dissolved pending further progress, or specific demands of WDC's or FAO, in connection with its Fisheries Data Center. The Committee requests the Secretariat to report to its Fifth Session on this matter.

5.5 International Biological Programme (IBP)

The Coordinator for the Productivity of Marine Communities (PM) aspects of IBP summarized the interest of its Sectional Committee in particular FAO activities planned to take place in the near future (e.g., the FAO World Technical Conference on Marine Pollution and its Effects on Fishery Resources and Fishing Operations, and the proposed Symposium on the Biological Results of IIOE), especially those concerned with productivity. IBP would assist in these projects as much as possible and was also prepared to act as co-sponsor of the Symposium on Marine Food Chains. He also informed the Committee that there was a proposal for an IBP Symposium on benthos research to be held this summer.

- (a) In the discussion which followed the Committee agreed that with respect to benthos there is a gap in our fundamental knowledge of the sea, not properly covered by the work of other organizations. The Committee therefore urges IBP to activate its Working Party on the subject and expresses the opinion that the holding of a Symposium within the next few years may eventually lead to the preparation of a handbook of methods, following the pattern so successfully adopted by the IBP Freshwater Sectional Committee.
- (b) The Committee noted with great interest that in 1968 the IBP will devote particular attention to comparative studies of coral reef areas. The Secretariat mentioned that an FAO/UNDP(SF) project for the development of coral reef fisheries in the South Pacific, which will be mainly concerned with exploratory and experimental fishing, appeared to be complementary to the IBP work. The Committee considers that productivity of coral reef areas is extremely important in view of the utilization of live bait for the fishing of skip-jack in the Central Pacific and the Indian Ocean.
- (c) The Committee expresses its thanks to the IBP observer for drawing its attention to the activities and future plans of the PM Sectional Committee and hopes that the present collaboration and coordination of action will be continued.

5.5.1 Symposium on the Biological Results of the International Indian Ocean Expedition (IIOE)

At its Meeting in Paris (April 1966), the IBP/PM Sectional Committee resolved to take steps to initiate a Symposium some time in 1969 on the Biological Results of the International Indian Ocean Expedition, and requested suggestions on this proposal from SCOR and UNESCO/IOC, and also the support of FAO and IPFC. Consultations by correspondence followed among the organizations concerned. Noting with interest the plans for a Symposium on the Indian Ocean being organized by the National Institute of Science of India (NISI) and the Indian National Committee on Oceanic Research (INCOR) to be held in New Delhi, March 1967, the Committee considers that advantage should be taken to discuss further the IBP proposal. The Committee was also informed that UNESCO would not be able to consider supporting the IBP Symposium before 1968/69, while SCOR had not yet had time to consider this suggestion. In discussing the proposal some members expressed the view that the proposed Symposium on the Biological Results of the IIOE should concentrate on a selected area, for example, the Arabian Sea. The Committee recommends that the Secretariat maintain contact with IBP and other potential sponsoring

organizations, and that FAO be advised to offer support for such a Symposium in case it could be arranged for it to also include fishery resources appraisal as a special objective, and that UNESCO/IOC be informed accordingly and their co-sponsorship solicited.

6. MATTERS CONCERNING THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC)

The Chairman invited the Secretary of IOC to introduce the sections to be covered by this item.

6.1 Biological Data Exchange

The Secretary of IOC summarized the existing arrangements regarding data exchange and the recent decisions of the IOC Working Group on International Oceanographic Data Exchange, and pointed out the modifications proposed for the Provisional Guide for Exchange of Oceanographic Data. The attention of the Committee was drawn to the paragraphs dealing with biological data exchange, where changes had been proposed by the IOC Working Group on the basis of the report of the SCOR/ACMRR Working Group on this subject. The Secretary of IOC referred to the difference of opinion which had arisen on this matter between scientists. The recommendation with the counter-opinion were briefly discussed.

The Committee agrees that the proposal of the IOC Working Group should be supported and hence, the relevant changes made to meet those in the draft of the IOC Provisional Guide for the Exchange of Oceanographic Data.

6.2 Coordination of International Undertakings using Oceanographic Data Exchange Systems developed in IOC

While more and more international organizations are engaged in various activities leading to exploitation of marine resources, it is essential that they use the knowledge of the oceans that has already been obtained. The Secretary of IOC posed the question as to whether the IOC was to be the basic source of environmental data for international fisheries expeditions and projects, and he submitted to the Committee his views that "When programs of rational fisheries are established the IOC should be requested to provide the oceanographic data for the scientific research on which these programs will be based. Such requests are best channelled through the ACMRR." The Secretary of IOC further explained that IOC "besides being able to provide the requesting activities with the data stored in the Data Centers, will also be able to undertake cooperative data-collecting campaigns in the proposed areas."

This proposition was discussed in some detail by the Committee. While appreciating all that IOC had done to facilitate the exchange of oceanographic data, and indeed to arrange for data of value to fisheries research to be collected during the course of oceanographic surveys concluded under its auspices, the Committee expresses the opinion that, where direct exchange between scientists and scientific bodies did not suffice, the best and simplest route for retrieving oceanographic data deposited with the WDC's would be direct to the WDC's themselves. The Committee points out that it is not itself an appropriate channel of such communications and directing requests through it, or indeed through other intermediaries, would inevitably introduce considerable delays. The Committee emphasizes its willingness to continue to act as an advisory body and to arrange ways of providing such advice when required.

6.3 Fisheries Aspects and Cooperative Undertakings of the IOC and Mutual Coordination of the associated FAO and IOC Activities

The Secretary of IOC explained that this item was mainly informative, but that IOC also was requesting advice on certain specific projects. He expressed appreciation of the close cooperation and collaboration developed between UNESCO/IOC and FAO, either directly or through its councils and commissions, and particularly with IPFC in relation to the CSK.

The Committee notes with satisfaction this trend, desires that it increase, and envisages the development of joint action in areas of mutual interest as a means of better serving member countries and science.

6.3.1 International Indian Ocean Expedition (IIOE) Fisheries Atlases

The Secretary informed the Committee that due to the sudden death, by accident, of Dr. H. Einarsson (working in the UNDP Special Fund Project in the Federation of South Arabia), it was necessary to reconsider the proposal made by ACMRR and transmitted by FAO to IOC for Dr. Einarsson to act as editor of the IIOE Fisheries Atlases. As a result of correspondence and direct consultations between Dr. Einarsson and the IOC Secretariat, two atlases are envisaged to cover (i) marine species of economic importance, and (ii) species of general zoological interest. The IOC Secretary reported on the progress of work on the other atlases. The Committee heard with interest of the work of the IPFC, in preparing, under the guidance of Dr. G.L. Kesteven, a manual on the fishery resources and present levels of exploitation in the Indo-Pacific region. The manual is to take the form of an annotated atlas with statistical tables.

The Committee therefore recommends that Dr. G.L. Kesteven (CSIRO, Australia) and Dr. F.H. Talbot (Australian National Museum) be nominated as editors of the IIOE Fisheries Atlases and jointly to prepare them. Subject to their agreement the FAO Secretariat would pass to them the information left by the late Dr. Einarsson. The IOC Secretariat should be informed of this proposal and explain to the nominees the procedure for final confirmation by the Commission of nominated editors.

6.3.2 International Cooperative Investigations of the Tropical Atlantic (ICITA) Follow-up

The Committee noted with great interest the successful work accomplished by the Symposium on the Oceanography and Fisheries Resources of the Tropical Atlantic (Results of ICITA and GTS), jointly sponsored by UNESCO/FAO/OAU. It endorses the resolutions adopted at the Symposium and urges UNESCO and FAO to continue, as appropriate, their joint action in the area especially as set out under Symposium Resolution 5.

6.3.3 Fisheries Aspects of the Cooperative Study of the Kuroshio (CSK)

The status of the fishery aspects of the CSK was reviewed by the CSK Assistant International Coordinator for Fisheries (AICF), Dr. J.C. Marr. Since the CSK is the first example of the addition of fishery studies (coordinated by FAO) to international oceanographic studies (coordinated by IOC), special attention was paid to (i) the organizational arrangements, (ii) the progress in fishery studies, (iii) probable future course, and (iv) general observations on the utilization of international oceanographic studies for the benefit of fishery studies.

The organizational arrangements included the addition of fishery experts to the CSK International Coordinating Group, the selection of an AICF, the support of AICF travel by FAO, and the coordination of fishery studies through joint Indo-Pacific Fisheries Council - CSK meetings (the first of which was held in Honolulu, October 1966). A group of species has been selected for investigation; the specific studies to be undertaken for each have been defined, and some are already in progress. Depending upon the state of knowledge and other factors, these projects range from the preparation of Species Synopses to studies of subpopulation identification and their relation to water masses. Arrangements are being made for the exchange of basic data on these species through the FAO Fishery Data Center.

The future course of the CSK fishery studies will depend, among other things, on the ability of the AICF to facilitate them. This will depend, in turn, on continued support by FAO and by the governments concerned. Since fishery investigations are, by their very nature, in general, of longer duration than oceanographic ones, and if the CSK fishery studies are to be truly effective, some mechanism must be found for their coordination following the completion of the CSK. The association of CSK fishery studies with the IPFC is therefore particularly appropriate and it is logical to expect that these would be continued through the IPFC.

It must be realized that, while fishery studies carried out as part of international oceanographic investigations are not as efficient as those designed entirely from a fishery standpoint, they can nevertheless be very useful, because of the opportunity they afford to carry out studies on a resource basis rather than a country basis. Criteria which may be used in the selection of species and problems include (i) that the species must be of importance to two or more countries and (ii) that the problems selected must be both important and capable of solution.

The Committee notes with pleasure the progress made in CSK fishery studies, commends the IPFC for coordinating these fishery studies, requests the Department of Fisheries to give every possible support to these studies, particularly with respect to the activities of the AICF and the FAO Fisheries Data Center, and recommends that this subject should be included on the Agenda for its next Session.

6.3.4 Cooperative Study of the Southern Mediterranean (CSSM)

The Secretary summarized the proposal made by the UNESCO Inter-Regional Meeting of Experts on Cooperative Oceanographic Studies of the Southern Mediterranean and the Levant (Split, 1965) and called attention to the activities in the area, particularly those under GFCM. The discussions centered around the problem as to whether plans for this Cooperative Study had progressed and the Committee noted the request made by the IOC Bureau at its Sixth Session that SCOR and ACMRR should consider the scientific aspects of the program, and that the matter be considered further at the next Bureau meeting. The Committee noted FAO's view that GFCM is the appropriate body to deal with fisheries matters in the region and, as in the case of CSK in relation to IPFC, FAO was prepared to give any necessary assistance to the fisheries aspects of the Cooperative Study should it be approved. From the discussion which followed, the Committee concludes that:

- (i) Although the report on the fisheries Indicative World Plan shows that the Mediterranean Sea is relatively poor in fish resources and that no great overall increase in fish production can be expected there, nevertheless, some local problems of fisheries development are worthy of more intensive study.
- (ii) There are problems of economic and scientific interest to the countries in the area to be studied e.g. the effect of the reduction of the Nile flood on fisheries, and the changes brought about by the migration of animals from the Red Sea through the Suez Canal.
- (iii) There is already an accumulation of existing data for the Mediterranean region calling for analysis and this may help in the elucidation of some of these problems.
- (iv) There is a need to stimulate the study of marine science in the countries around the Mediterranean Sea and to reduce the dissipation of effort between the existing international organizations responsible for marine science in the area.

The Committee looks forward with interest to receiving the detailed proposals of IOC concerning the CSSM in order that it might comment on their value with regard to the development of the fisheries of the Mediterranean. The Committee points out that before such a cooperative study is decided upon, a full analysis of existing data should be made, in order to permit proper planning of any proposed investigations.

6.3.5 Proposal for a Cooperative Study of the Caribbean Sea

The Committee was informed that the proposal to be made by the Netherlands representatives to IOC had not yet been received by the ACMRR Secretariat and it was to be assumed that the proposal had not been submitted officially to IOC. In these circumstances the matter could not be debated by ACMRR.

6.3.6 Proposal for International Project of Studying the North Atlantic Dynamics and Hydrology

The proposals for this project were recently received from Prof. Kort, and it was noted that SCOR have also been asked for advice. Considerable discussion ensued on this subject, and strong comment was made to the effect that this proposed project was much larger than any previous expedition, and raised once again the question of variability in the oceans. This question had been considered during a SCOR symposium in May 1966 and SCOR had not favoured a large-scale variability experiment at that time on the grounds that (i) the capabilities of moored instrument arrays had not yet been adequately assessed; (ii) the procedures for the analyses of time series data had not been fully formulated. In addition the question was raised as to whether existing data in the area had been fully utilized. The Secretary of IOC amplified some of the points and outlined correspondence between Professor Kort and himself.

It was recognized that Professor Kort had taken account of existing data and considered that his scheme avoided the difficulties envisaged by SCOR. Further detailed discussion, however, posed two major questions: (i) was the requisite ship time available; (ii) was Professor Kort's proposed methodology appropriate, particularly with respect to the absolute measurement of heat fluxes. Further, even if these two questions were to be answered satisfactorily, and even if there is great scientific merit in the proposal, is it necessary or wise to tie up all existing oceanographic resources in this project, particularly when its direct fisheries content is small?

The Committee notes that, apart from the question of ship and instrument resources, it appears that the methodology is not yet sufficiently advanced for this proposal to be effectively carried out.

7. OTHER BUSINESS

7.1 Improvement of Committee Work

The Committee considered a report of an ad hoc Working Group prepared in consultation with the ACMRR Secretariat, on proposals for improvement in ACMRR procedures. The report was transmitted for consideration by the Assistant Director-General, Department of Fisheries, and for action as far as practicable by the Secretary.

7.2 Third International Oceanographic Congress

The Secretary informed members that on the agenda for the next meeting of the IOC Bureau and Consultative Council there is an item on the Third International Oceanographic Congress. The Secretary of SCOR said that he

understood an invitation had been received from the Government of Chile for the Congress to be held there in 1971 or 1972, although apparently other localities had been mentioned.

The Committee suggests that this item should be placed on the agenda for the next session, and requests the Secretariat to keep in touch with developments.

APPENDIX 1

AGENDA

1. Procedural matters
 - 1.1 Opening of the Session.
 - 1.2 Adoption of the Agenda.
 - 1.3 Date and Place of Fifth Session.
 - 1.4 Election of officers for the forthcoming period of activities.
2. Implementation of recommendations of Third Session
3. Guide lines for the development of FAO activities
 - 3.1 Relations between ACMRR and COFI.
 - 3.2 Fishery resource aspects of Indicative World Plan (IWP) - World Program of Marine Resources Research.
 - 3.3 FAO Regional Fisheries Councils and Commissions*.
 - 3.4 Fisheries Resources Cooperative Investigations.
 - 3.5 General Review of Program of Work of the Fishery Resources and Exploitation Division for 1968/69 and Future Biennia.
4. Department of Fisheries Program of Work in the field of marine resources
 - 4.1 Intelligence activities (Current Contents in Marine Science; Species Synopses; FAO contribution to IMS).
 - 4.2 Organization of Research, Education and Training (Assessment of national and regional needs of fisheries scientists and technicians and national training facilities for international utilization; Sea-going Seminars and Fellowships; Regional Training Centers).
 - 4.3 Meetings: Conference on hake resources; Symposium on Tropho-Dynamics of Marine Communities*; Symposium on the Productivity of the Indian Ocean; Second Fishery Research Vessel Conference.
 - 4.4 Appraisal of marine resources and conservation (FAO Fisheries Data Center; Speedier Estimation of Fish Abundance*; Tuna research and conservation; Fisheries statistics and biological sampling for stock assessment; Exploration and charting of resources).
 - 4.5 Environmental studies (Fishermen's Charts and Utilization of Synoptic Data)
 - 4.6 Marine Pollution and its Effects on Fisheries Resources.
5. Coordination and Cooperation with other bodies
 - 5.1 UN (Advisory Committee on the Application of Science and Technology to Development; UN recommendation on Development of Natural Resources - Resources of the Sea)

* Discussions on the basis of Report received from pertinent ACMRR Working Party.

- 5.2 UNESCO (Symposium on Coastal Lagoons).
- 5.3 WMO (World Weather Watch and Meteorological services to shipping).
- 5.4 Regional Fisheries Councils and Commissions (particularly IWC).
- 5.5 SCOR (Future of the SCOR/ACMRR Working Group on Biological Data; GSF and future revisions; Joint SCOR/ACMRR Working Group on Marine Pollution*).
- 5.6 IBP.
- 6. Matters concerning the Intergovernmental Oceanographic Commission
 - 6.1 Biological data exchange**.
 - 6.2 Coordination of data consuming international activities with the Data Exchange System developed under the IOC**.
 - 6.3 Fisheries aspects of the cooperation undertaken by the IOC (IIOE and CSSM; proposal for a cooperative study of the Caribbean Sea**).
 - 6.4 Future meetings of common interest**.
 - 6.5 Other matters.
- 7. Other business
- 8. Adjournment

* Discussions on the basis of Report received from pertinent ACMRR Working Party.
** Items proposed by the IOC Secretariat.

APPENDIX 2

STATEMENT BY MR. R.I. JACKSON, ASSISTANT DIRECTOR-GENERAL,
DEPARTMENT OF FISHERIES, OPENING ON BEHALF OF THE DIRECTOR-
GENERAL THE FOURTH SESSION OF THE ACMRR, 16 JANUARY 1967

Gentlemen:

Once again it is my privilege, both on behalf of the Director-General and on behalf of my colleagues and myself, to welcome you to Rome to participate in a Session of the Director-General's Advisory Committee on Marine Resources Research. Among the present members of the ACMRR there are several who have participated in its earlier sessions, and even I think a few who have continued to assist the Organization since the first session of the Committee.

I would like to give a special welcome to the new members of the Committee, although all of you have, I know, been associated with FAO's fishery work in one way or another before your nomination to this body. I would give a special word of welcome to Dr. Alexseev and Dr. Bogdanov, as the members nominated by the Director-General on the basis of proposals by the Inter-governmental Oceanographic Commission under UNESCO to participate in the work of the Committee in its role as advisory body to that Commission. We are very glad to see also the Secretary of the IOC and representatives and observers from other international bodies, including the Specialized Agencies of the UN, international fishery bodies and non-governmental organizations and, particularly, ICSU's Scientific Committee on Oceanic Research.

This is the first time that the ACMRR will be meeting in the new offices of the fishery unit of FAO, and I have asked the Secretary of the Committee especially to ensure that you are assisted in such travel and personal arrangements as may be necessitated by our distance from FAO Headquarters.

Rather a long period has elapsed since the Third Session of the Committee. This delay in calling the Fourth Session was related essentially to the re-organization of the fishery activities of FAO starting early in 1966, consequent upon decisions taken by the 1965 General Conference. During the long inter-sessional period, however, opportunity has been taken, as will become apparent during your consideration of various agenda items, for Working Parties established on the recommendation of the Committee to begin work, and for the Secretariat also to take some actions based on recommendations the Committee made to the Director-General in 1965. In this connection special mention should be made of sessions that have been held by the Advisory Committee's Working Parties on Direct and Speedier Estimation of Fish Abundance and on Fishermen's Charts and Synoptic Data, as well as the joint SCOR/ACMRR Working Party on the oceanographic aspects of marine pollution, reports of which will be before the Committee this week.

As I am sure you must be aware, the considerations of the Advisory Committee in its first years played a very important part in creating an international climate permitting the substantial strengthening of the fishery activities of FAO, especially on the marine research and exploration side. In this climate too the proposals for structural changes were made and subsequently approved by the FAO General Conference, in the form of the creation of a Department of Fisheries and of an inter-governmental Committee on Fisheries. Within the Department of Fisheries has been established a Division of Fishery Resources and Exploitation which, with the exception of fishery statistics, is responsible for all the activities covered by the terms of reference of this Committee, including marine biological research, resource exploration and assessment, problems connected with research vessels, and related problems of gear technological research. As you will see when you come to consider item 4 of your draft provisional agenda which deals with the Program of Work of the Department of Fisheries in the field of marine resources, several activities have now been associated which tend to draw together the work in these distinct but closely inter-dependent subject fields. I have in mind, for example, the forthcoming meetings on fish behaviour in relation to fish capture and fishing tactics, and also the Conference on fishery research craft, which will deal not only with

naval architectural aspects of vessel design and construction, but also with the problems of the use of research vessels for exploratory fishing and the design criteria for the effective conduct of resources research.

In view of very recent international developments it has become even more apparent how timely was the decision to strengthen FAO's activities in the fisheries field. As you will know, the UN only a few weeks ago adopted a resolution calling for a comprehensive survey of certain activities of the various Organizations of the UN family and others with respect to the sea, and of the relations between these and for recommendations for further action that may be required. This review is to be conducted through the collaboration of the UN Agencies mainly concerned and both ACMRR and COFI have a very special role in this. I am most anxious that your Committee give time during this week to consideration of the consequences of this resolution and to advise the Director-General on his response to it.

Another matter for special consideration which has not come up in previous sessions of the Committee relates to advice on the need for inter-governmental action. A special place has been reserved on the agenda for the forthcoming second session of the Committee on Fisheries for consideration of any matters which the ACMRR may recommend to the Director-General that he should place before the Committee on Fisheries for its subsequent discussion and action. This therefore might become a rather special aspect of the ACMRR role in advising the Director-General on his marine resources research program.

Since the Third Session of the ACMRR, we have begun working actively on our contribution to the Organization's Indicative World Plan for agricultural development. Very recently a meeting of consultants here in Rome has helped us begin to put together the information and to make an evaluation of the state of knowledge of the potential yields of marine fishery resources. This is an activity which I think is of great interest to the ACMRR in view of its recommendation for the initiation of a world appraisal of marine resources research, and the results of this study will be of interest directly to Governments in their attempts, both individually and collectively through regional or even global bodies, to develop rational fishery policies based on a sound knowledge of the natural resources available and of the present or possible future effects of fishing on them.

With respect to the regional coordination and promotion of marine fishery research, your Working Party on FAO Fishery Councils and Commissions has been working here during the past week. I regret very much that I was unable to be present for its meeting and look forward to an opportunity to read its report, which I understand was the outcome of a particularly lively discussion between the members of the Working Party and staff members concerned. The question of the development and orientation of regional activities and the creation of effective inter-governmental instruments for this purpose is a matter of very urgent concern to the Department of Fisheries. At its first session the Committee on Fisheries established a Sub-Committee to look into this matter and the Sub-Committee will be meeting almost immediately after your Session closes. I am sure that it is most important that your views, based on consideration of your Working Party report, on the marine resource research aspects of this problem, be communicated by the Director-General to the COFI Sub-Committee, and that these will provide valuable background for the Sub-Committee's more general consideration of the matter. In addition, FAO is becoming involved with attempts at the solution of some specific regional problems. You are all aware of the conclusion last year of a Convention for the Conservation of Atlantic Tunas. When this Convention is adhered to by sufficient nations, and the Commission which it establishes first meets, it will have a very important discussion of such problems as the secretariat and servicing of the Commission and its special relationship with FAO.

FAO's attention has recently been drawn to the fisheries problems of the Indian Ocean, and to consider what should be done about these the Committee on Fisheries has established a special Working Party which also meets here next week. There have been extensive discussions of the problems of the marine resources in the western tropical Atlantic, details of which will be communicated to you during this week, and concerning which FAO recently co-sponsored with UNESCO and the Organization for African Unity a very successful scientific symposium in Abidjan. The resource problems in their assessment and conservation aspect are also becoming pressing in the southern temperate Atlantic, both on the western and eastern sides. FAO has already been asked to take certain actions on both sides, and in the east both with

respect to the problems of the tropical resources, and of the resources in southern temperate waters.

A general problem of global nature, but of particular significance in certain regions, is that of marine pollution. Following the initiative of ACMRR at its second and third sessions, important steps have been taken to review this problem in all its aspects, and on the basis of this to develop a coherent FAO program. As a result of your recommendation UNESCO's Inter-Governmental Oceanographic Commission was also requested to consider the oceanographic aspects of the pollution problem, and that Commission has made arrangements to do so. Thus, a general problem in which FAO and national fisheries departments have a major interest is receiving the attention of the several Specialized Agencies concerned with the sea, in one aspect or another, the ACC Sub-Committee on Marine Science and its Applications, as well as of other international bodies.

I have just mentioned one facet of FAO's relation with UNESCO and the IOC and, as usual, you will be considering IOC problems in your advisory capacity under a special item of your agenda. We believe that your advice in this respect will become increasingly useful to the IOC in orientating its activities to practical ends and particularly contributing to the provision of background environmental information which will be necessary for the full rational development and utilization of living marine resources, on which rest so many hopes for meeting the world protein deficiency. With respect to particular IOC activities there has been developed in this inter-sessional period a close and, we believe, useful relationship between the IOC coordinating group for the Cooperative Study of the Kuroshio and the Indo-Pacific Fisheries Council. The fishery aspects of the Kuroshio study are very important, and of great significance to the work of the IPFC. We are particularly pleased therefore to have been able to arrange the presence here of the International Fishery Coordinator for the CSK. There are many other subjects - for example, the problem of data exchange - on which, on the basis of ACMRR advice, we have been developing joint activities with UNESCO. It might be that in the new situation which is developing in the world with respect to the exploitation and the utilization of ocean resources generally, the time is coming for some re-consideration of the general relationships between the IOC, UNESCO, and FAO. You may recall that FAO originally proposed that the IOC be established as a joint Commission under both FAO and UNESCO with the possible participation of the other UN Specialized Agencies which have a substantial interest in the ocean. Later, on the other hand, UNESCO provided in the IOC statutes for participation in its Secretariat of staff from other specialized agencies. Neither of these actions was found acceptable, but I would suggest that a new, comprehensive look at the problem would be timely.

I should like to turn now to our expanding field activities, especially those deriving from the UN Special Fund. The fisheries projects which are financed by this body and for which FAO is the executing agency, continue to grow in numbers, and most of them have a large element of marine resources exploration and research. These projects, apart from their intrinsic value to the countries concerned, and in strengthening regional fishery research activities, are also a stimulus to FAO's other fishery work, and provide great opportunities of implementing research proposals. They do, however, continue to cause us difficulties in planning, servicing, and in recruitment of experienced scientists to conduct them. Some of the implications of this and of the fact that in their substantive aspects and in particular areas, the field programs and parts of the Regular Program are becoming very closely integrated, will be brought to your notice during the Session. There have, further, been some new developments in the regional technical assistance program, also as a result of the discussion during the Third ACMRR Session, and we hope to embark upon a useful series of projects for research training at sea by the provision of sea-going fellowships and through certain other arrangements.

May I finish by saying that we have just completed our part of the Program of Work and Budget for 1968/69 which the Director-General will be presenting to the FAO Conference later this year. Copies of this will be made available to you and your further views on our proposals for strengthening and, to a certain extent, re-orienting our activities with respect to marine resources would be very much appreciated, both from the point of view of modification which will still be possible in the 1968/69 program, and of guidance in preparing proposals for the third biennium of re-organization and strengthening of the FAO fishery activities.

On behalf of the Director-General I shall close now so that you may begin your work without further delay, and again thank you for your cooperation in agreeing to assist and work with us. The Director-General has asked me to say that although he is unable to be here this morning, he nevertheless hopes that an opportunity can be arranged for him to meet you at some time during the week.

APPENDIX 3

LIST OF INFORMATION PAPERS

- ACMRR : 4/67/IP.1 Advisory Committee on the Application of Science and Technology to Development, Sixth Session. The assessment of marine fishery resources by Fishery Resources and Exploitation Division, Department of Fisheries, FAO, Rome.
- ACMRR : 4/67/IP.2 1. Report of the Sixth Session of the ACC Subcommittee on Oceanography (FAO Headquarters, Rome, 15-18 March 1966).
2. Extract from: Administrative Committee on Coordination. Forty-first session 27-29 April 1966 - London. Marine Science.
- ACMRR : 4/67/IP.3 WMO. World Weather Watch. Planning Report No. 7. Meteorological Observations from Mobile and Fixed Ships.
- ACMRR : 4/67/IP.4 Report of the First Session of the Committee on Fisheries, Rome, 13-18 June 1966.
- ACMRR : 4/67/IP.5 SCOR Working Group 12. Abstracts and Bibliographies of Use in Marine Sciences. 2nd Meeting, Marseille, 27-29 October 1965.
- ACMRR : 4/67/IP.6 Conference of Plenipotentiaries on the Conservation of Atlantic Tunas. Rio de Janeiro, Brazil, 2 to 14 May 1966.
- ACMRR : 4/67/IP.7 Report of the Second Session of the FAO Expert Panel for the Facilitation of Tuna Research. Tokyo, 15-21 August 1966.
- ACMRR : 4/67/IP.8 Report on the Bibliographic Comparison of Current Bibliography for Aquatic Sciences and Fisheries, FAO, with Hydrographische Dokumentation, DHI, by Dr. Fritz Model.
- ACMRR : 4/67/IP.9 General Fisheries Council for the Mediterranean. Eighth Session, FAO, Rome, 10-15 May 1965. Report.
- ACMRR : 4/67/IP.10 FAO Conference on Fish Behaviour in Relation to Fishing Techniques and Tactics. Draft Prospectus by Fishery Resources and Exploitation Division, Department of Fisheries.
- ACMRR : 4/67/IP.11 Informe de la Tercera Reunión de la Comisión Asesor Regional de Pesca para el Atlántico Sudoccidental (CARPAS), Montevideo, Uruguay, 25-29 de abril de 1966.
- ACMRR : 4/67/IP.12 Council. Forty-Seventh Session of the Council, Rome, 17-28 October 1966. Provisional Report.
- ACMRR : 4/67/IP.13 Extracts from the Summary Record of the Conference on Fishery Administration and Services. Rome, 21-25 November 1966.
1. Agenda item 2: Fishery Research; 2. Agenda item 3: Fisheries education and training.
- ACMRR : 4.67.IP.14 The Director-General's Program and Budget for 1966-67.
- ACMRR : 4/67/IP.15 International Biological Programme. Extracts from IBP News Nos. 5, 6 and 7, including reports of PM Sectional Committee Meetings (Rome, October 1965 and Paris, April 1966).
- ACMRR : 4/67/IP.16 International Fishery Bodies. Papers presented at the First Session of the Committee on Fisheries, Rome, 13-18 June 1966, by FAO Department of Fisheries and Department of Public Relations and Legal Affairs.

- ACMRR : 4/67/IP.17 Organization and Administration of Fisheries Research by G.L. Kesteven, Assistant Chief, Division of Fisheries and Oceanography, CSIRO, Cronulla, Australia.
- ACMRR : 4/67/IP.18 Council. Forty-Seventh Session of the Council, Rome, 17-18 October 1966. Program Activities: Fisheries Department.
- ACMRR : 4/67/IP.19 Committee on Fisheries, First Session, Rome, 13-18 June 1966. Preliminary Review of Items for Consideration at Future Sessions.
- ACMRR : 4/67/IP.20 Committee on Fisheries, First Session, Rome, 13-18 June 1966. Review of Programs of Work of FAO in the Field of Fisheries.
- ACMRR : 4.67.IP.21 International Council of Scientific Unions. Proceedings of the Scientific Committee on Oceanic Research, Volume 2.
- ACMRR : 4/67/IP.22 Indicative World Plan. Report. Meeting of the IWP Working Group on Marine Resources Appraisal.
- ACMRR : 4/67/IP.23 Extracts from Report on Travel to Abidjan (Ivory Coast) to attend the UNESCO/FAO/STRC-OAU Symposium on Oceanography and Fisheries Resources of the Tropical Atlantic, 20 to 28 October 1966, by M. Ruivo and D. Sahrhage.
- ACMRR : 4/67/IP.24 The State of Food and Agriculture, 1967. Chapter IV. The Management of Fisheries Resources (First Draft).
- ACMRR : 4/67/IP.25 Working Group on Mutual Assistance. Report of the First Meeting to the Bureau and Consultative Council of the IOC, Paris, 14-16 June 1966.
- ACMRR : 4/67/IP.26
 1. Note to ECOSOC in relation to its Resolution 1112(XL) of 7 March 1966 concerning a survey of the present state of knowledge of the mineral and food resources of the sea, beyond the Continental Shelf, but excluding fish.
 2. Background material.
- ACMRR : 4/67/IP.27 COFI Sub-Committee on the Development of Cooperation with International Organizations concerned with Fisheries. First Session, FAO Headquarters, Rome, Italy, 25-28 January 1967. Rational Utilization of the Fishery Resources of the Eastern-Central Atlantic and the Southeastern Atlantic.
- ACMRR : 4/67/IP.28 COFI Sub-Committee on the Development of Cooperation with International Organizations concerned with Fisheries. First Session, FAO Headquarters, Rome, Italy, 25-28 January 1967. FAO Regional Fisheries Advisory Commission for South-west Atlantic (CARPAS). Revision of Statutes.

APPENDIX 4

LIST OF WORKING PAPERS

- ACMRR : 4/67/WP.1 Draft Provisional Agenda.
- ACMRR : 4/67/WP.2 List of Participants.
- ACMRR : 4/67/WP.3 List of Working Papers.
- ACMRR : 4.67.WP.4 List of Information Papers.
- ACMRR : 4.67.WP.5 Summary Report on the activities of FAO Department of Fisheries in Marine Resources Research and Management, prepared by ACMRR Secretariat.
- ACMRR : 4/67/WP.6 Report of Working Party to Consider a Symposium on Tropho-Dynamics of Marine Communities.
- ACMRR : 4/67/WP.6
(Suppl. 1) Various correspondence dealing with the Symposium on Tropho-Dynamics of Marine Communities.
- ACMRR : 4/67/WP.7 Notes on the items submitted by the Intergovernmental Oceanographic Commission for discussion by the ACMRR of FAO.
- ACMRR : 4/67/WP.8 Progress Report on Activities of Working Party on Direct and Speedier Estimation of Fish Abundance, by B.B. Parrish (Convener).
- ACMRR : 4/67/WP.8
(Suppl. 1) Report of ACMRR Working Party on Direct and Speedier Estimation of Fish Abundance. Supplement to Report of the Fourth Session of ACMRR.
- ACMRR : 4/67/WP.9 Report of Joint SCOR/ACMRR Working Group 18 on Biological Data (Paris 25-27 October 1965).
- ACMRR : 4/67/WP.10 List of Forthcoming Meetings on Marine Science (April 1966/ April 1967). Prepared by Biological Data Section, Stock Assessment Branch, Fishery Resources and Exploitation Division.
- ACMRR : 4/67/WP.11 A Provisional List of Experts on Marine Pollution. Compiled by Biological Data Section, Fishery Resources and Exploitation Division.
- ACMRR : 4/67/WP.12 Progress Report on Implementation of ACMRR Recommendations by ACMRR Secretariat.
- ACMRR : 4/67/WP.13 Report of the ACMRR Working Party on Fishermen's Charts and Utilization of Synoptic Data. November 1966.
- ACMRR : 4/67/WP.13
(Suppl. 1) Various correspondence dealing with Fishermen's Charts and Utilization of Synoptic Data.
- ACMRR : 4/67/WP.13
(Suppl. 2) Various correspondence dealing with Fishermen's Charts and Utilization of Synoptic Data.
- ACMRR : 4/67/WP.14 SCOR/ACMRR Working Group on Marine Pollution, Paris 12-14 December 1966.
- ACMRR : 4/67/WP.15 Background Notes on Agenda Items for Discussion by ACMRR.
- ACMRR : 4/67/WP.16 Report on the 3rd Session of the IOC, Paris 10-19 June 1964.
Report on the 4th Session of the IOC, Paris 3-12 November 1965.

- ACMRR : 4/67/WP.17 Report on the 5th Meeting of the IOC, Rome 14-18 June 1965.
Report on the 6th Meeting of the IOC, Paris 16-18 May 1966.
- ACMRR : 4/67/WP.18 Progress Report on the Fishery Aspects of the Cooperative Study of the Kuroshio (CSK), by John C. Marr, CSK Assistant International Coordinator for Fisheries.
- ACMRR : 4/67/WP.19 Report of the Working Group on International Oceanographic Data Exchange, Copenhagen 31 March - 2 April 1966.
- ACMRR : 4/67/WP.20 Report of the Inter-Regional Meeting of Experts on Cooperative Oceanographic Studies of the South Mediterranean and the Levant, Split, Yugoslavia, 6-10 December 1965.
- ACMRR : 4/67/WP.21 Selected Correspondence on the IBP/PM Sectional Committee. Proposal for a Symposium on the Biological Results of the International Indian Ocean Expedition.
- ACMRR : 4/67/WP.22 Progress Report: Preparation of Second FAO Conference on Fisheries Research Craft (Seattle, U.S.A., September 1967) by the FAO Secretariat.
- ACMRR : 4/67/WP.23 Report of the Third Session of the Advisory Committee on Marine Resources Research. Rome, 1-8 March 1965.
- ACMRR : 4/67/WP.24 Notes on Exploratory Fishing Activities prepared by Dayton L. Alverson, Exploratory Fishing and Gear Research Base of the U.S. Bureau of Commercial Fisheries, Seattle, Washington, U.S.A.
- ACMRR : 4/67/WP.25 International Project of Studying the North Atlantic Dynamics and Hydrology by Prof. V.G. Kort, Institute of Oceanology, Moscow, U.S.S.R.
- ACMRR : 4/67/WP.26 FAO Fisheries Data Center Progress Report 2.
- ACMRR : 4/67/WP.27 Report of the ACMRR Working Party on FAO Regional Fisheries Councils and Commissions.
- ACMRR : 4/67/WP.28 Program of Work and Budget for 1968/69. B - Department of Fisheries. Draft.
- ACMRR : 4/67/WP.29 Background Documentation on the United Nations General Assembly Recommendation on Development of Natural Resources - Resources of the Sea.
- ACMRR : 4/67/WP.30 Staff and Funds engaged in FR Division in relation to Marine Resources (Exploration, Assessment, Related Research) by S.J. Holt.
- ACMRR : 4/67/WP.31 Statement by Mr. R.I. Jackson, Assistant Director-General, Department of Fisheries, opening on behalf of the Director-General the Fourth Session of the ACMRR, 16 January 1967.
- ACMRR : 4/67/WP.32 WNO. World Weather Watch. The Global Data-Processing System and Meteorological Service to Shipping and Other Marine Activities
- ACMRR : 4/67/WP.33 Draft Report of the Fourth Session of the Advisory Committee on Marine Resources Research, Rome, 16-21 January 1967.
- ACMRR : 4/67/WP.34 Report of Ad Hoc Working Group consisting of Dr. Mitra (Convener), Dr. Kesteven, Dr. Ricker and Dr. Chapman, to prepare in consultation with the ACMRR Secretariat proposals for improvement in ACMRR procedures.
- ACMRR : 4/67/WP.35 Resources of the S.E. Atlantic.

APPENDIX 5

LIST OF PARTICIPANTS

Members of ACMRR

Mr. John N. ADJETEY*	Chief Fisheries Officer Ministry of Fisheries The Castle, P.O. Box 1627 Accra, Ghana
Dr. Arkadi P. ALEKSEEV	Director, Polar Research Institute of Marine Fisheries and Oceanography Knipovichstr. 6 Murmansk U.S.S.R.
Dr. Alexander S. BOGDANOV	Director, VNIRO 17 V. Krasnoselskaya Moscow U.S.S.R.
Dr. Wilbert M. CHAPMAN	Director, Division of Resources Van Camp Sea-Food Company 739 Golden Park Avenue San Diego California 92106, U.S.A.
Prof. Walerian CIEGLEWICZ	Morski Instytut Rybacki Eleja Zjednoczenia 1 Gdynia Poland
Dr. Hamed GOHAR	Director-General Institute of Oceanography and Fisheries Council of Scientific Research 101 Qasr el Aini Cairo, U.A.R.
Prof. Yoshio HIYAMA	Fisheries Department Faculty of Agriculture Tokyo University Tokyo, Japan
Dr. Geoffrey L. KESTEVEN	Assistant Chief CSIRO Division of Fisheries and Oceanography Box 21, Cronulla N.S.W., Australia
Dr. Pieter KORRINGA	Director Rijksinstituut voor Visserij-Onderzoek Haringkade 1, P.O. 68 Ijmuiden, Netherlands
Mr. Arthur J. LEE	Deputy-Director Fisheries Laboratory Ministry of Agriculture, Fisheries and Food Lowestoft, Suffolk England

*Unable to attend.

Dr. Cyril E. LUCAS, F.R.S.	Director, Marine Laboratory Department of Agriculture and Fisheries for Scotland P.O. Box 101 Victoria Road Torry, Aberdeen Scotland
Dr. John L. McHUGH	Assistant Director for Biological Research Bureau of Commercial Fisheries U.S. Fish and Wildlife Service Washington 25, D.C. U.S.A.
Dr. Gajendra N. MITRA	Fisheries Development Adviser to the Government of India Ministry of Food and Agriculture New Delhi India
Dr. William E. RICKER	Fisheries Research Board of Canada Biological Station Nanaimo, B.C. Canada
Dr. Haroldo P. TRAVASSOS	Assessor do Superintendente da SUDEPE para Assuntos Técnicos e Pesquisas Praça 15 de Novembro Rio de Janeiro Brazil

Members of ACMRR Working Party on FAO Regional Councils
and Commissions
(Attending ACMRR Fourth Session)

Dr. G.L. KESTIVEN (Convener)	
Prof. F. GNERI	Aranguren 1258, Dto.3° Buenos Aires (Suc. 5) Argentina
Prof. H.A.F. GOHAR	
Dr. C.E. LUCAS	

Representatives and Observers of International Organizations

UNESCO and IOC

Dr. K.N. FEDOROV (Secretary of IOC)	Director Office of Oceanography UNESCO 2 Place de Fontenoy Paris 7e France
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Assistant Director-General
Department of Fisheries

Mr. F.E. POPPER

Director of Program Coordination
and Operations
Department of Fisheries

Dr. S.J. HOLT

Director, Fishery Resources and
Exploitation Division

Dr. M. RUIVO

Chief, Marine Biology and Environment
Branch

Mr. M.N. MISTAKIDIS

Fishery Biologist, Marine Biology
and Environment Branch

Dr. D. SAHRHAGE

Chief, Marine Biology Section, Marine
Biology and Environment Branch

Dr. A. BEN-TUVIA

Fishery Biologist, Marine Biology Section,
Marine Biology and Environment Branch

Dr. I. YAMANAKA

Chief, Marine Environment Section, Marine
Biology and Environment Branch

Dr. F. WILLIAMS

Manager Designate, Regional Fisheries
Survey in West Africa

Mr. J. A. GULLAND

Chief, Fish Stock Evaluation Branch

Mr. E.F. AKYUZ

Chief, Biological Data Section, Fish
Stock Evaluation Branch

Mr. H. KRISTJONSSON

Chief, Gear Technology Section, Fishery
Resources and Exploitation Division

Mr. J.O. TRAUNG

Chief, Fishing Vessel Section, Fishery
Resources and Exploitation Division

Mr. W. DOUCET

Chief, Fishery Statistics and Economic
Data Branch

Other staff members attended for discussions on certain items.

Officers during the Fourth Period of Activities of the Committee
up to and including the Fourth Session

Chairman	Dr. C.E. LUCAS, F.R.S.
Vice-Chairman and Rapporteur	Dr. G.L. KESTEVEN
Vice-Chairman	Dr. W.M. CHAPMAN

Secretariat of the Committee

Secretary	Dr. M. RUIVO
Administrative Assistant	Miss C. de FREITAS
Assistant	Miss S. de FRISTON

APPENDIX 6

UNITED NATIONS

GENERAL
ASSEMBLY

Distr.
LIMITED

A/RES/2172(XXI)
8 December 1966

Twenty-first session
Agenda item 94

RESOLUTION ADOPTED BY THE GENERAL ASSEMBLY

[on the report of the Second Committee (A/6533)]

2172 (XXI). Resources of the sea

The General Assembly,

Recognizing the need for a greater knowledge of the oceans and of the opportunities available for the utilization of their resources, living and mineral,

Realizing that the effective exploitation and development of these resources can raise the economic level of peoples throughout the world, and in particular of the developing countries,

Taking into account with appreciation the activities in the field of resources of the sea at present being undertaken by the United Nations, the United Nations Educational, Scientific and Cultural Organization and, in particular, its Intergovernmental Oceanographic Commission the Food and Agriculture Organization of the United Nations and, in particular, its Committee on Fisheries, the World Meteorological Organization, the Advisory Committee on the Application of Science and Technology to Development, other intergovernmental organizations concerned, various Governments, universities, scientific and technological institutions and other interested organizations,

Considering the need to maximize international co-operative efforts for the further development of marine science and technology and to avoid duplication or overlapping of efforts in this field,

1. Endorses Economic and Social Council resolution 1112 (XL) of 7 March 1966 requesting the Secretary-General to make a survey of the present state of knowledge of the resources of the sea beyond the continental shelf, excluding fish, and of the techniques for exploiting these resources;

2. Requests the Secretary-General - in co-operation with the United Nations Educational, Scientific and Cultural Organization and, in particular, its Intergovernmental Oceanographic Commission, the Food and Agriculture Organization of the United Nations and, in particular, its Committee on Fisheries, the World Meteorological Organization, other intergovernmental organizations concerned, and the Governments of interested Member States, and utilizing, inter alia, such voluntary services as may be offered - to undertake, in addition to the survey requested by the Economic and Social Council, a comprehensive survey of activities in marine science and technology, including that relating to mineral resources development, undertaken by members of the United Nations family of organizations, various Member States and intergovernmental organizations concerned, as well as by universities, scientific and technological institutes and other interested organizations;

3. Requests the Secretary-General, in co-operation with the United Nations Educational, Scientific and Cultural Organization and, in particular, its Inter-

governmental Oceanographic Commission and the Food and Agriculture Organization of the United Nations and, in particular, its Committee on Fisheries, and in the light of the above-mentioned comprehensive survey to formulate proposals for:

(a) Ensuring the most effective arrangements for an expanded programme of international co-operation to assist in a better understanding of the marine environment through science and in the exploitation and development of marine resources, with due regard to the conservation of fish stocks;

(b) Initiating and strengthening marine education and training programmes, bearing in mind the close interrelationship between marine and other sciences;

4. Requests the Secretary-General to set up a small group of experts to be selected, as far as possible, from the specialized agencies and intergovernmental organizations concerned, to assist him in the preparation of the comprehensive survey called for in paragraph 2 above and in the formulation of the proposals referred to in paragraph 3 above;

5. Requests that the survey and proposals prepared by the Secretary-General be submitted to the Advisory Committee on the Application of Science and Technology to Development for its comments;

6. Requests the Secretary-General to submit his survey and proposals, together with the comments of the Advisory Committee, to the General Assembly at its twenty-third session, through the Economic and Social Council.

1485th plenary meeting,
6 December 1966.

APPENDIX 7

NAMES AND ABBREVIATIONS OF ORGANIZATIONS AND PUBLICATIONS
REFERRED TO IN THIS REPORT

ACC	- Administrative Committee on Coordination (ECOSOC)	ICSU	- International Council of Scientific Unions
ACMRR	- Advisory Committee on Marine Resources Research (of FAO)	IIOE	- International Indian Ocean Expedition
AICF	- Assistant International Coordinator for Fisheries (CSK)	IMCO	- Inter-Governmental Maritime Consultative Organization
CARPAS	- Comisión Asesora Regional de Pesca para el Atlántico Sudoccidental	IMS	- "International Marine Science"
		INCOR	- Indian National Committee on Oceanic Research
COFI	- Committee on Fisheries (of FAO)	IOC	- Inter-Governmental Oceanographic Commission (under UNESCO)
CSK	- Cooperative Study of the Kuroshio		
CSIRO	- Commonwealth Scientific and Industrial Research Organization	IPFC	- Indo-Pacific Fisheries Council (FAO)
		IWC	- International Whaling Commission
CSSM	- Cooperative Study of the South Mediterranean	IWP	- Indicative World Plan
ECOSOC	- Economic and Social Council (of UN)	NISI	- National Institute of Science (of India)
FAO	- Food and Agriculture Organization of the United Nations	OAU/STRC	- Organization of African Unity/Scientific, Technical and Research Commission
GFCM	- General Fisheries Council for the Mediterranean (FAO)	RFCWA	- Regional Fisheries Commission for Western Africa
GSF	- General Scientific Framework for World Ocean Study (IOC)	SCIBP	- Special Committee for the International Biological Program (of ICSU)
GTS	- Guinean Trawling Survey (under OAU/STRC)	" (PM)	- Sectional Committee on the Productivity of Marine Communities
IAEA	- International Atomic Energy Agency		
IAWPR	- International Association on Water Pollution Research	SCOR	- Scientific Committee on Oceanic Research (of ICSU)
		SOFA	- "State of Food and Agriculture"
ICES	- International Council for the Exploration of the Sea	UN	- United Nations
ICITA	- International Cooperative Investigations of the Tropical Atlantic	UNDP(SF)	- United Nations Development Programme (Special Fund) (Technical Assistance)
		" (TA)	
ICNAF	- International Commission for the Northwest Atlantic Fisheries	UNESCO	- United Nations Educational Scientific and Cultural Organization

VNIRO

- All Union Institute of Marine
Fisheries and Oceanography
(USSR)

WMO

- World Meteorological
Organization

WDC

- World Data Center

